THE CHAMBERED CAIRN

AND ADJACENT MONUMENTS

ON GREAT AYTON MOOR
NORTH-EAST YORKSHIRE

By
R, H. HAYES

SCARBOROUGH AND DISTRICT ARCHAEOLOGICAL SOCIETY
RESEARCH REPORT No. 7

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R. H. HAYES

With contributions by

G. W. DIMBLEBY, T. F. SPENCE,
and J. G. RUTTER

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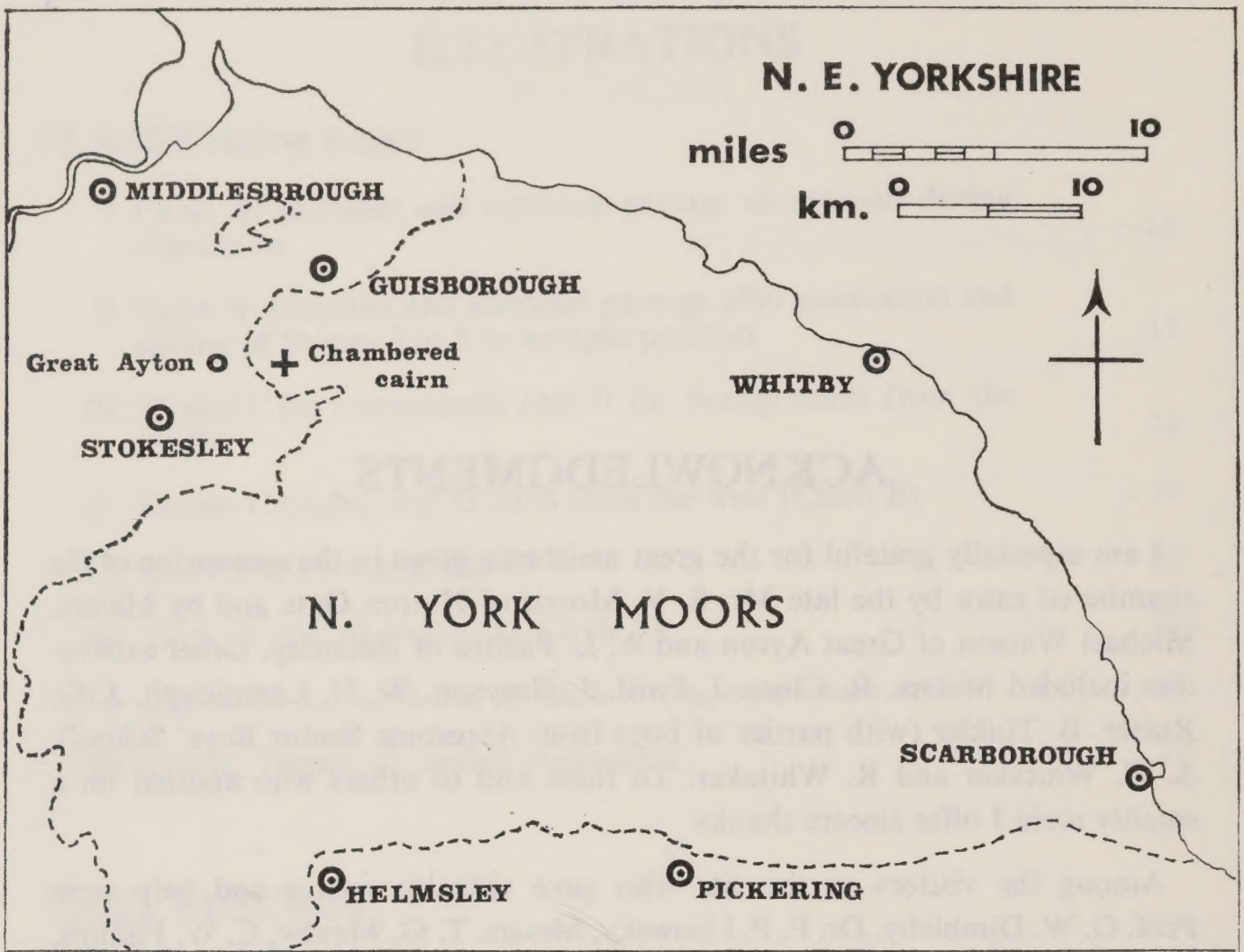
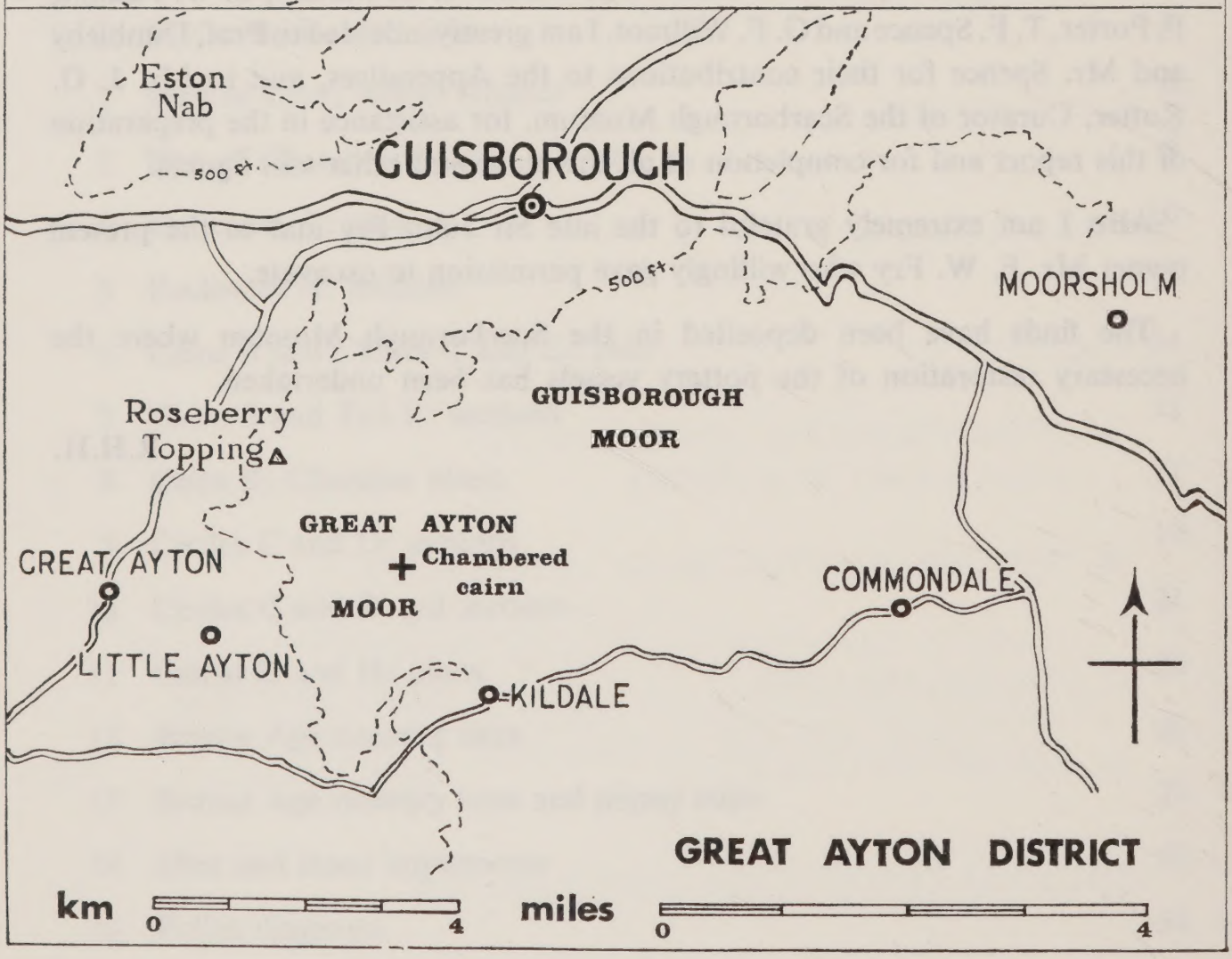
Among the visitors to the site who gave valuable advice and help were Prof. G. W. Dimbleby, Dr. F. P. Lisowsky, Messrs. T. G. Manby, C. W. Phillips, P. Porter, T. F. Spence and G. F. Willmot. I am greatly indebted to Prof. Dimbleby and Mr. Spence for their contributions to the Appendices, and to Mr. J. G. Rutter, Curator of the Scarborough Museum, for assistance in the preparation of this report and for completion of all the plans and other text figures.

Also I am extremely grateful to the late Sir John Fry and to the present owner Mr. F. W. Fry who willingly gave permission to excavate.

The finds have been deposited in the Scarborough Museum where the necessary restoration of the pottery vessels has been undertaken.

R.H.H.





Top: 1. *Map of N.E. Yorkshire.* *Bottom:* 2. *Map of Great Ayton District.*

INTRODUCTION TO SITE

SITUATION (Figs. 1 and 2)

The chambered cairn of Great Ayton (National Grid Reference NZ 594115) is situated in the north-western corner of the North York Moors among the prominent range of heights known as the Cleveland Hills. It is on the unenclosed moor of the parish of Great Ayton 2 miles east of the village of that name and 8 miles south east of the town of Middlesbrough in the industrial Teesside. The topography of the moorlands in this area is complicated by the existence of an intricate system of deep overflow channels created by glacial action (Kendall 1902) and Great Ayton Moor itself is almost completely severed from the adjacent moorland plateau. It forms a block nearly 2 miles long by 1 mile in width with steep escarpments to the north and west. To the south the overflow channel of Gribdale separates Great Ayton Moor from Easby Moor (1064 ft.) with its monument to Captain Cook. The outlier Roseberry Topping (1057 ft.) also separated by an overflow channel, dominates the landscape to the north-west. On the east is the larger overflow channel at the north-western end of Sleddale. To the south-east Great Ayton Moor is joined to Percy Rigg (Kildale Moor) (917 ft.) by a ridge a quarter-mile wide.

The chambered cairn at an altitude of about 935 ft. lies well south of the highest part of Great Ayton Moor (1044 ft.) and extends down a gentle slope from north-east to south-west. These heather moors lie upon the Estuarine Sandstone of the Inferior Oolite but the plateau top is strewn with boulders and pebbles from the glacial drift. Bracken grows profusely on the slopes of the moor and over several of the prehistoric sites including part of the chambered cairn. Elsewhere patches of rushes and sphagnum are found in damp or peaty hollows. A thin topsoil is followed by a subsoil of sand, which at a depth of 9 to 13 ins. is normally separated from the underlying yellow shaly sandstone by a thin hard layer of iron pan, a natural encrustation typical of the North York Moors.

RECENT HISTORY

The earliest record of the site is to be found on the Ordnance Survey maps where on the early editions the Enclosure A is described as 'Camp'. On later editions this was changed to 'Earthwork'. The chambered cairn itself (Cairn B) and one of the burial circles (Circle C) are shown on the maps, together with the numerous small cairns in the vicinity as 'Tumuli'. The long bank (Tail E) is ignored.

A second enclosure on Great Ayton Moor (NZ 598114), roughly rectangular in shape is shown on the Ordnance Survey maps as an 'Earthwork' about a quarter mile south-east of the chambered cairn complex. Recent excavations on this site, a report of which is forthcoming, has disclosed pottery of Iron Age B character.

Enclosure A was regarded by Elgee (*Early Man*, 143) as part of a settlement of the Urn people and is described as 'an oval low stone-walled enclosure, the longest diameter about 140 ft. Its purpose is obscure'. He makes no mention of the other associated features of the monument.

The complexity of the site was not realised until it was first examined by the late Mr. S. V. Morris, Mr. Michael Watson and the writer in 1953. Permission to excavate was obtained from the owner of the moor and work commenced in September 1953 and continued annually until May 1960. The labour force was composed entirely of volunteers and ten to fifteen days were devoted each season to the work.

BRIEF DESCRIPTION OF CHAMBERED CAIRN COMPLEX (FIG. 3):—

ENCLOSURE A (Fig. 4)
A large oval enclosure at N.E. end of monument measuring 150 ft. from N.E. to S.W. and 98 ft. in width. Surrounded by low bank, 1½ ft.-2 ft. high and 10 ft.-14 ft. wide. Three cairns (A1, A2 and A3) form parts of the bank.

CAIRN B (Fig. 6)
A large cairn at S.W. end of Enclosure A measuring 56 ft. to 54 ft. in diameter and 3 ft. in height. A chamber and entrance passage are situated in the S.W. half of the cairn.

CIRCLE C (Fig. 6)
Stone-walled circle adjoining E. side of Cairn B with an overall diameter of 30 ft. The stone bank measures 5 ft. in width and 2 ft. to 2½ ft. in height. Two cremation pits were found in the interior.

CIRCLE D (Fig. 6)
A similar stone-walled circle adjoining E. side of Cairn B and N. side of Circle C Diameter 25 ft. to 27 ft. Bank 2 ft. high and 4 ft. 6 in. wide. The interior contained three cremation pits.

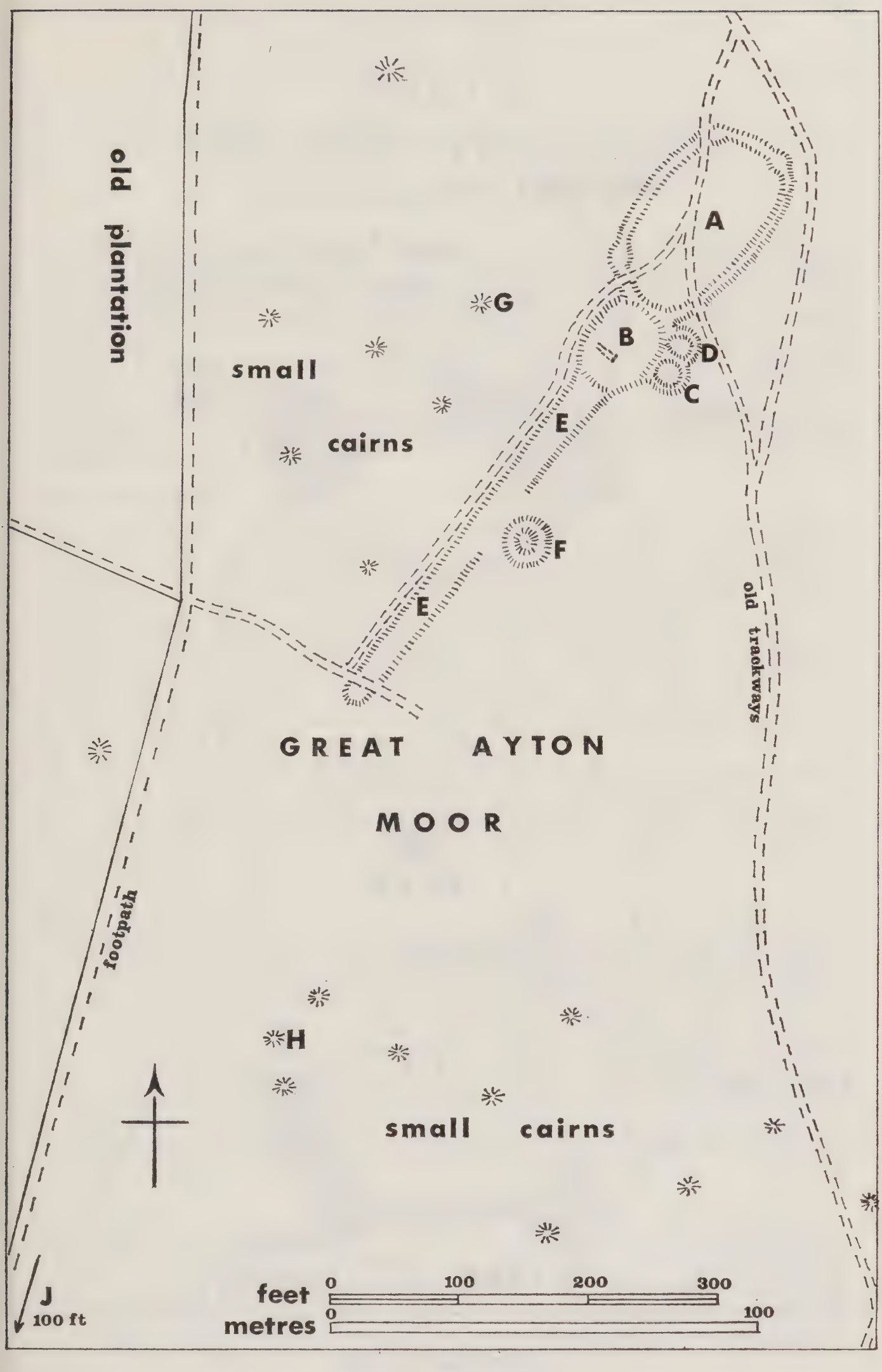
LONG BANK OR 'TAIL' E (Fig. 4)
A low bank of stones and earth extending S.W. from Cairn B for a distance of at least 300 ft. At point of junction with Cairn B it measures 30 ft. in width and 2 ft. in height, but dwindles to a width of 10 ft. - 12ft. and a height of 1 ft. or less at S.W. end.

CAIRN F (Fig. 4)
Round cairn 40 ft. in diameter adjacent to S.E. side of 'Tail' E. Probably previously excavated.

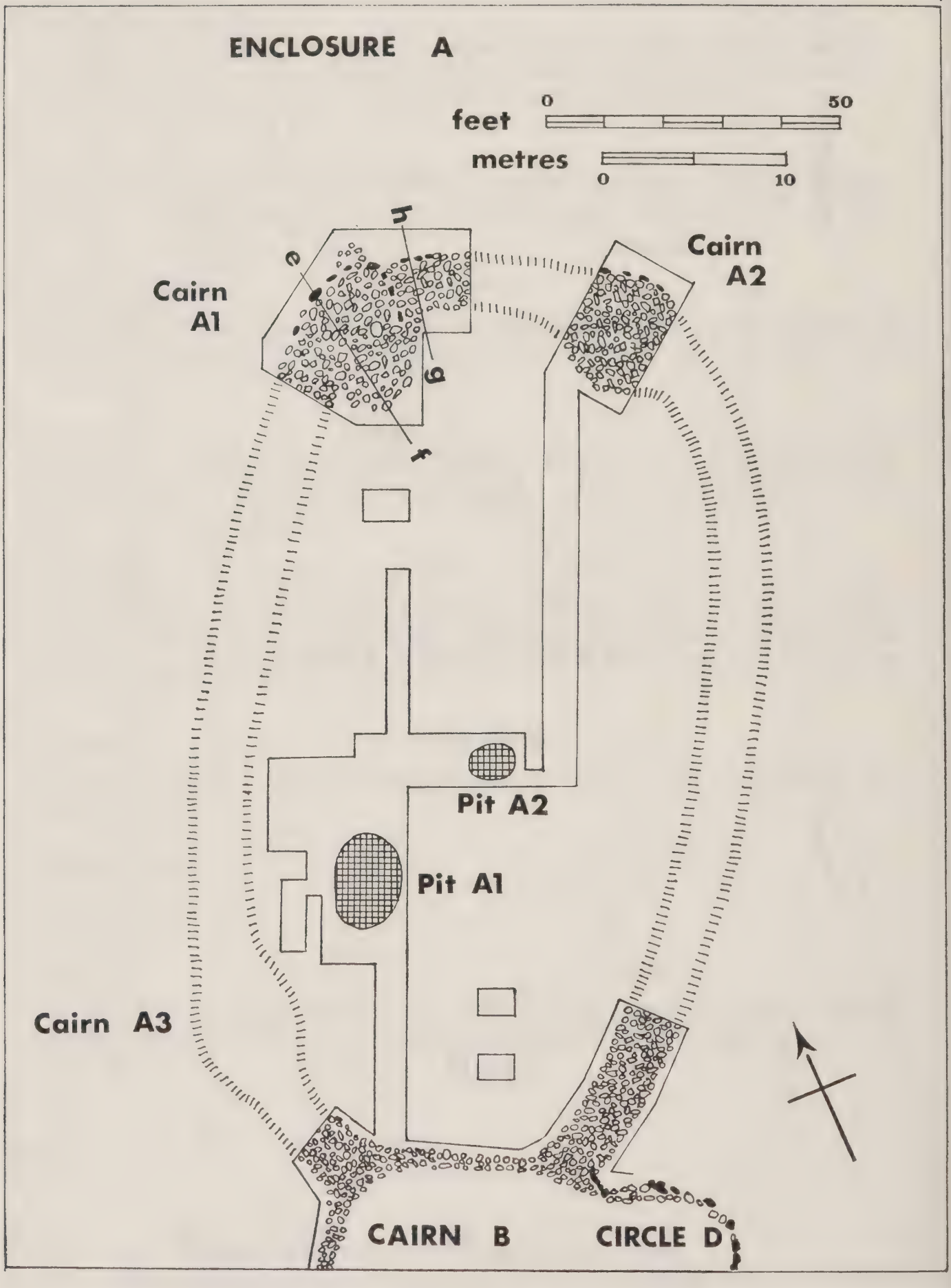
CAIRN G (Fig. 11)

CAIRN H (Fig. 11)

CIRCLE J
The above three sites situated in the vicinity of the chambered cairn complex were excavated 1953-60 and are recorded in pages 23-25 of this report.



3. *Plan of Chambered Cairn complex.*



4. *Enclosure A: plan.*

PART I
THE EXCAVATIONS
ENCLOSURE A (Fig. 4)

A large embanked enclosure (A), roughly oval in shape, extends northwards from the chambered cairn (B) for 150 ft. The maximum overall width amounts to 98 ft. and for most of its length the width exceeds 80 ft. At its junction with Cairn B the width is 50 ft. The interior of the earthwork was examined by means of trenches and a resistivity tester.The whole was covered with a thin layer of soil upon a subsoil of sand, which at a depth of from 10 to 15 ins. was succeeded by bed-rock of shaly sandstone. Only two features of interest were discovered—Pits A1 and A2. Finds from the interior were extremely meagre—one worked (F5) and several unworked flint flakes, one small fragment of pottery (P9) and several quartz pebbles.

THE BANK (Plate VIA)

The embankment surrounding the enclosure appears to have been originally continuous, the gaps that occur appear to be the result of recent trackways crossing the site. The latter are now disused. The bank consists chiefly of stones of moderate size covered with soil 10 to 14 ft. wide and usually only $1\frac{1}{2}$ to 2 ft. high, with traces of revetment on the outer side. No outer ditch is present.

A short length of the bank excavated at the northern end of the enclosure showed (Fig. 5, Section g-h) a fairly compact layer of stones 10 ft. wide and 2 ft. thick resting on 4 to 6 ins. of sandy subsoil sealed by $\frac{1}{2}$ to 1 inch of iron pan. Below the subsoil was the shaly sandstone rock. Some of the larger stones on the outer edge of the bank were set on edge.

A further section of the bank measuring 30 ft. in length was excavated from a point where the bank joins the north-eastern quadrant of Cairn B. The width was about 10 ft. but the height had been reduced by a disused trackway which crossed the bank in this vicinity. On the stones of the bank was a tiny scrap of red pottery (P8).

CAIRN A1 (Fig. 5, Section e-f)

Three small cairns were incorporated in the bank of the enclosure. The largest at the north-west 'corner' was completely excavated. It measured 23 ft. from north to south by 15 ft. 9 ins. from east to west and stood 2 ft. high in the centre. The stones of the cairn were of medium or small size (averaging 12 ins. x 9 ins.) and several showed signs of fire prior to being placed in the cairn. A few stones around the northern half were set on edge and may have represented a kerb. There were no indications of a burial or cremation, but under the north-west quadrant was a shallow basin in the sand subsoil 9 ins. deep and 3 ft. in diameter, in which was a mass of oak charcoal. Two discs of worked shale (S5 and S6) resembling flint scrapers found associated with the charcoal were the only artefacts present in the cairn.

CAIRN A2

This small cairn in the north-east 'corner' of the enclosure was also excavated. It appeared to be simply a widening of the bank to 20 ft. from north to south and 14 ft. from east to west, with a height of only $1\frac{1}{2}$ ft. The stones, less in quantity than in Cairn A1, were loosely piled upon the sandy subsoil. There were some vestiges of an outer kerb on the northern edge. No artefacts or charcoal were found and only a few of the stones were burnt.

CAIRN A3

The third small cairn, which has not been excavated, is situated in the bank 18 ft. north-west of the junction of the latter with north-western quadrant of Cairn B. It measures approximately 20 ft. from north to south and 12 ft. from east to west and appears to contain more soil than the other cairns.

PIT A1 (Fig. 5)

Pit A1 was discovered during the extension of a trench from Cairn B by the disclosure of patches of charcoal and burnt sand. It proved to be an irregularly shaped rock-cut pit measuring approximately 15 ft. from north to south, 12 ft. from east to west and 3 ft. 6 ins. deep from turf level. The infilling of this pit was chiefly fragments of sandstone in a sandy deposit much of which was burnt. A large slab of sandstone resting at an angle of about 25 degrees and measuring 2 ft. 6 ins. x 2 ft. 6 ins. was found in the southern half with burnt sand and fragments of charcoal on the underside. No trace of cremated bone was present and no artefacts were found. There was also no complete layer of iron pan but only traces towards the edges of the pit.

PIT A2 (Fig. 5)

A second rock-cut pit was discovered by the use of a resistivity tester. It was oval-shaped 8 ft. in diameter from east to west, 6 ft. from north to south and 3 ft. deep from turf level. The infilling was sandstone boulders in brown sand much of it burnt and containing a little charcoal and carbonised wood. A large natural rock formed part of the western edge. Iron pan sealed part of the eastern side of this pit. At 8 ins. below the turf-line, in the sandy subsoil above the infilling was a scrap of brown pottery (P9). No other artefacts were present but in the sandy subsoil to the north-west of the pit was a flint flake knife (F5).

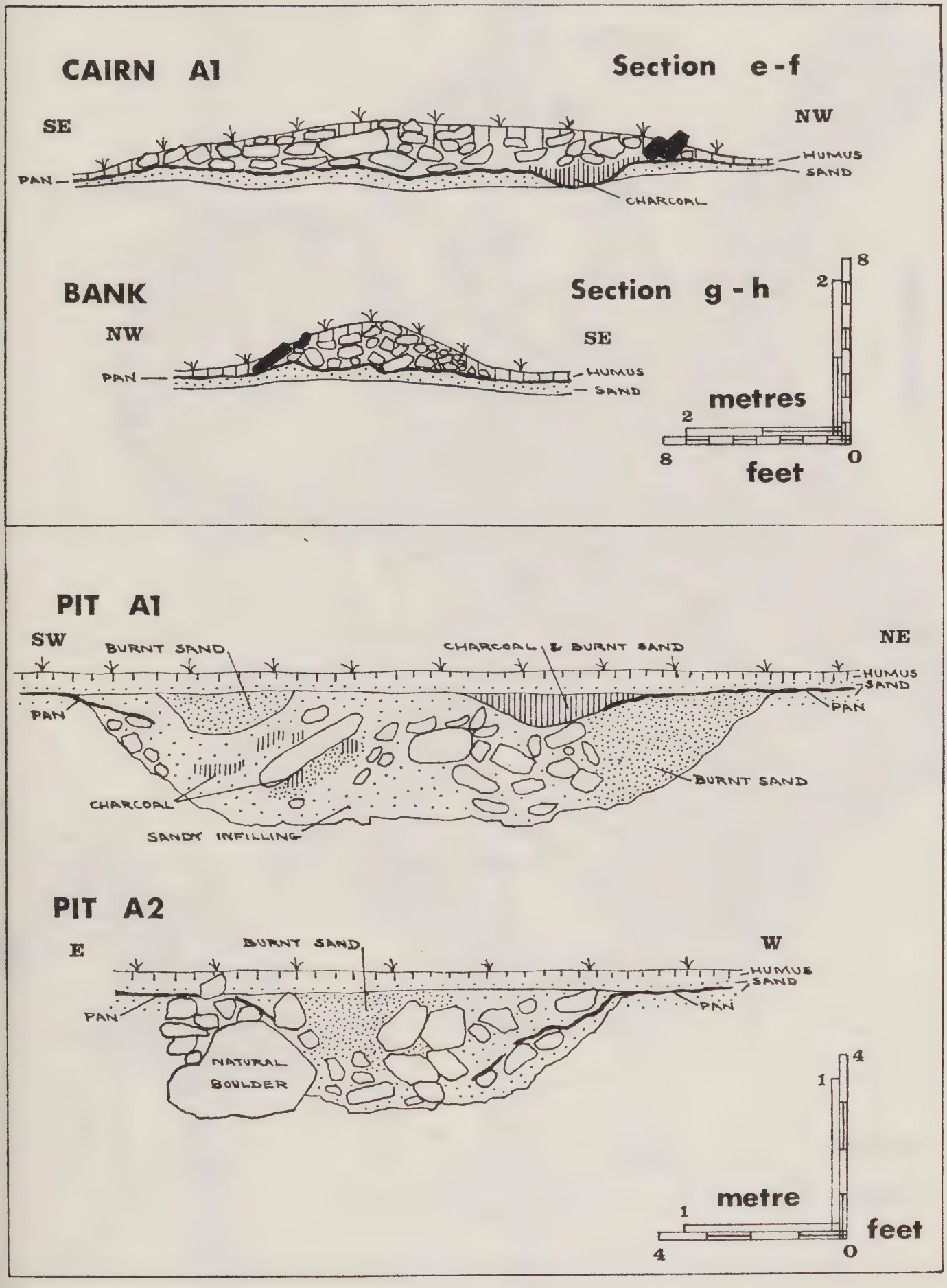
CAIRN B (Fig. 6)

Cairn B is the most prominent feature of the site standing about 3 ft. above the general level of the moor. It measures 56 ft. from north to south and 52 ft. from east to west and is constructed of boulders, many of large proportions. Apart from hollows on the east side and a shallow depression west of the chamber the cairn appeared intact before excavation, although it is probable that the upper stones of the cairn have been removed possibly to build the Circles C and D. Excavation of the greater part of the cairn disclosed only one area of previous disturbance. This was a comparatively small part of the south-eastern quadrant, to the east of the chamber.

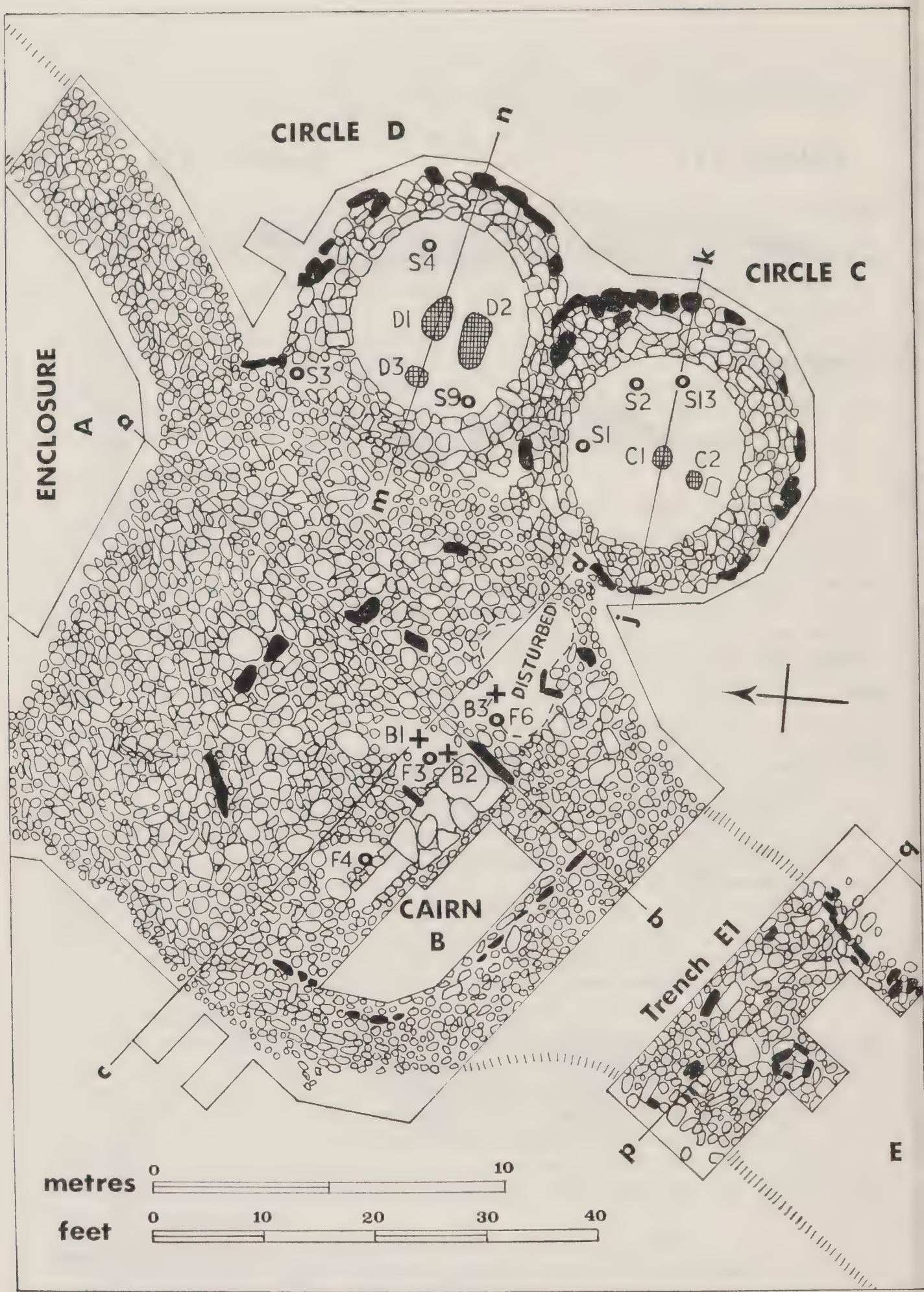
The lower boulders of the cairn rested upon grey or yellow sandy subsoil below which a deposit of iron pan separated the subsoil from the shaly sandstone rock (Fig. 7, Sections a-b and c-d). Near the edges of the cairn the layer of iron pan was particularly thick. A feature of the cairn was the large number of burnt stones, some heavily reddened by fire and others possessed traces on one side only. Charcoal was found, usually on the yellow subsoil below the stones, but not in sufficient quantities to justify the assumption that the stones were burnt within the cairn.

The principal features discovered in the cairn are as follows:

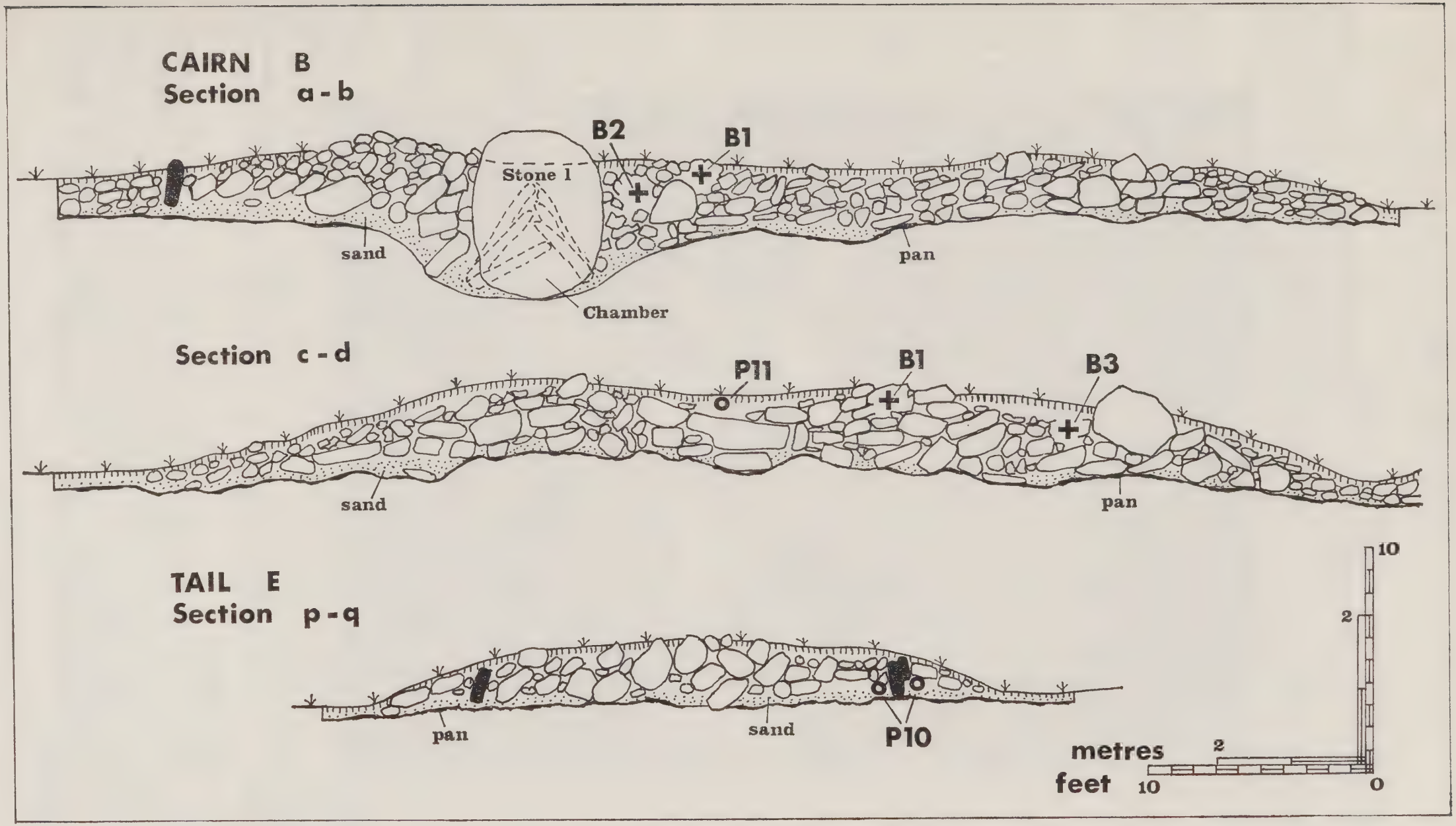
(1) The chamber and its entrance passage in the S.W. quadrant.
(2) A possible kerb of upright stones.
(3) Three cremation burials of the Middle Bronze Age within the S.E. quadrant.



5. Enclosure A: sections.



6. *Cairn B and Circles C and D: plan.*



7. *Cairn B and Tail E: sections.*

THE CHAMBER (Fig. 8 and Plates I and II)

This was the most outstanding discovery of the whole complex and was found about 10 ft. south of the centre of the cairn. One large stone (No. 1) of the chamber projected about 1 ft. above the general surface of the cairn, but the other slabs were covered by a foot or less of small boulders and turf. The upper portion of Stone No. 1 had been exposed for a long period to judge from the deep weathering present.

Stone No. 1, or the 'Headstone' as it became known, proved to be the massive upright slab forming the S.E. end of the chamber. It measures 7 ft. in height, 5 ft. 6 ins. in width and 1 ft. in thickness and was the only upright stone in the chamber. It was also the only stone to be inserted into the underlying sandstone rock, its base being 22 ins. below that of the side slabs of the chamber.

From the 'Headstone' the side walls of the chamber extended north-westwards for 11 ft. 6 ins. and were formed from eight large slabs (four on each side) inclined inwards in a regular manner to create an inverted V-shaped chamber with a height of about 2 ft. 6 ins. These slabs were about 3 to 4 ft. long and 2 ft. 6 ins. to 2 ft. 10 ins. wide and except for the smaller slab No. 7 they were resting upon the yellow sandy subsoil. When first exposed 6 ins. to 12 ins. of smaller stones and turf had to be removed and no sign of interference was visible. If the wall slabs had been originally upright and the chamber roofed with slabs about 5 ft. wide a considerable depression would have been the result of the removal of these capstones. No suitable large slabs were found on the cairn. A roof of stone-corbelling or wood could have disappeared without much trace but considerably more loose stone would have been expected in the chamber if this had occurred. Furthermore on the outside of the north-west wall of the chamber a large stone (No. 10) was found set upright at right-angles to Stone No. 5 of the wall in such a position that the latter could not have stood upright (Fig. 8).

When the side stones of the chamber were raised upright (Plate II and Fig. 8) a pyramid of sandy infilling was left standing. Four to six inches below the apex was a black band of humus 1-2 ins. thick which marked the root level of the mass of bracken growing on top of the cairn. This was followed by 24 ins. of sandy soil containing only a few small stones which rested on a subsoil layer of yellow sand. Large areas of the subsoil, particularly in the centre and south eastern end of the chamber, were burnt red and possessed scattered patches of charcoal. The burnt sand extended under Stone 4 on the south-western side of the chamber. A single pit was found, 15 ins. deep and 18 ins. wide, to the south-west of the centre. It contained burnt sand, a few burnt stones and some pieces of Scots Pine charcoal. No traces of post holes, pottery or cremated bones were found within the chamber.

A rudimentary entrance passage extended from the north-western end of the chamber for a distance of 6 ft. and then merged into the body of the cairn 17 ft. from its circumference. This passage was only 24 ins. wide at the chamber end tapering to 21 ins. and was formed by five or six courses of dry-stone walling in good condition standing about 2 ft. 6 ins. high. The interior was blocked for almost its entire length by large rounded boulders (some 2 ft. in diameter).

THE KERB (Fig. 6)

There were possible traces of an irregular kerb in the form of upright slabs but most of these were not set deeply into the cairn. They were most numerous in the S.W. quadrant where they were distributed in a very uneven and incomplete curved line at between 5 to 8 ft. from the circumference of the cairn. Only a few odd large slabs offered any support for the presence of a kerb in the other quadrants. The longest slab, 5 ft. long, 1 ft. wide and 3 ft. high stood in the N.W. quadrant.

I. Cairn B; chamber and entrance passage as exposed during excavation.

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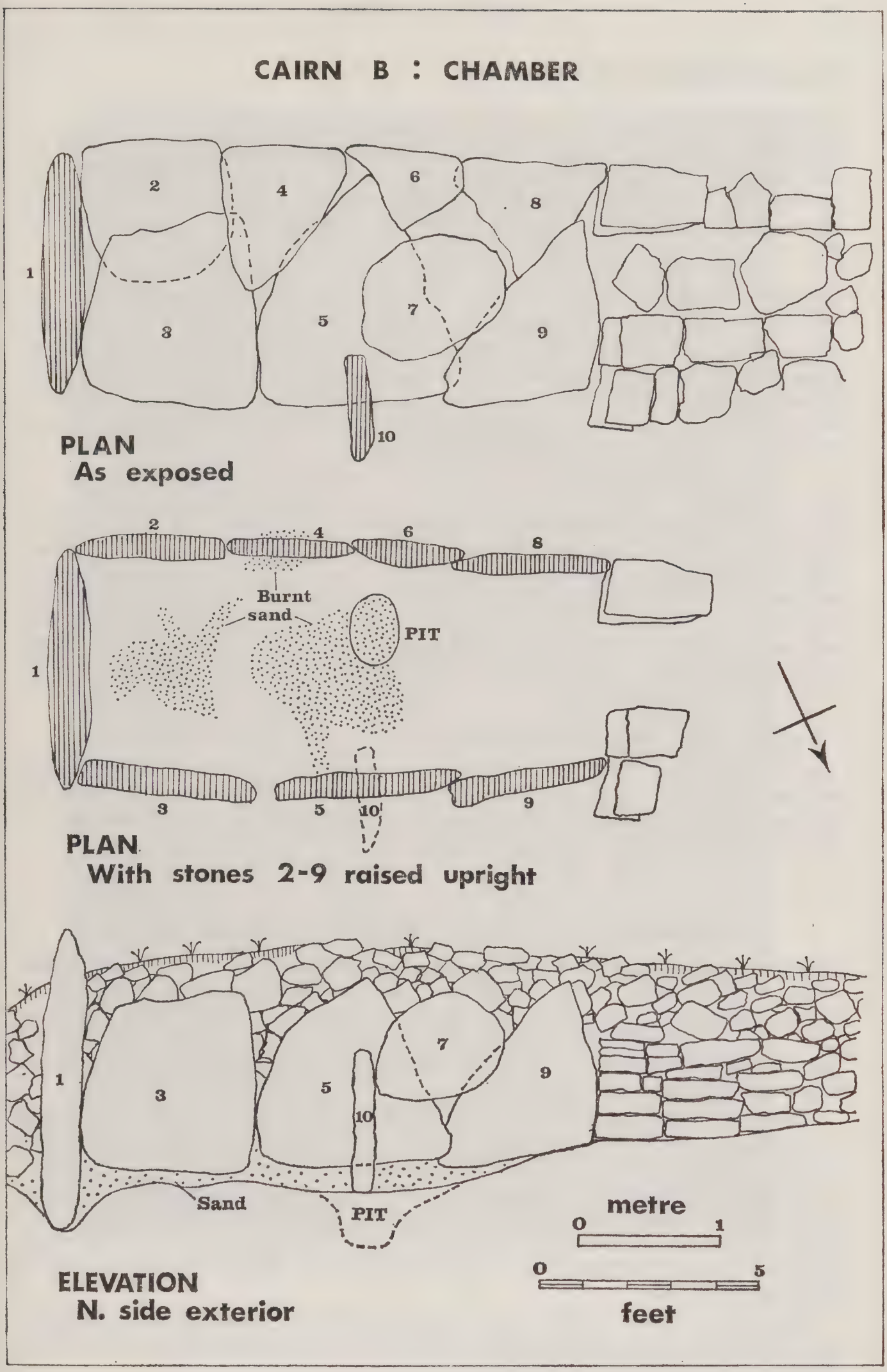
Facing page 17

II. Cairn B; chamber and entrance passage after excavation and raising of Stones 2 to 9 to upright position,



8. *Cairn B: Chamber plans.*

THE SECONDARY BURIALS

CREMATION B1

About 5 ft. north of Stone 1 of the chamber was Cremation B1, a mass of calcined bones (Appendix B) around the remains of an inverted overhanging-rim urn (P1) of the Middle Bronze Age. This find was made only between 6 ins. and 13 ins. below the surface of the cairn and there were no signs of a cover-stone or cist.

CREMATION B2

This burial was only 2 ft. north-west of Stone 1 of the chamber and between 13 ins. and 20 ins. below the turf covering of the cairn. Among the spread of cremated bones (Appendix B) were five fragments of a Middle Bronze Age pigmy cup (P6) which had been re-fired presumably in the funeral byre. There were no indications of a cist or cover-stone. A flake knife in flint (F3) was found in the upper part of the cairn near Cremation B2.

CREMATION B3

The third cremation found in Cairn B was from a point 4 ft. E.N.E. of Stone 1 of the chamber and this also contained pieces of pottery from a Middle Bronze Age pigmy cup (P7). The sherds were from 8 to 12 ins. below the turf surface of the cairn, but the cremated bone (Appendix B), which was not very plentiful, was scattered down to a depth of 30 ins. A white quartz pebble lay among the cremated bones and a second abraded specimen (S14) was found nearby. A foot away in the topsoil of the cairn was a flint knife (F6). No traces of a cover-stone or cist were present.

OTHER FINDS FROM CAIRN B

The only artefacts found within Cairn B not mentioned above were a flint knife-scraper (F4) found behind the north-west wall of the passage at a depth of 24 ins., a polished stone (S7) and a small abraded boulder (S12). A number of flint chippings were present and a flint core (F9).

CIRCLE C (Fig. 6 & Plates III & IV)

Abutting the eastern side of Cairn B were two adjoining stone-embanked circles about 27 to 30 ft. in diameter. Circle C was the slightly larger with an overall diameter of 28 to 30 ft. and with a well-made bank 5 or 6 ft. wide and 2 ft. to 2 ft. 6 ins. high. The bank was formed of stones of various sizes resting upon the yellow shaly sandstone, and much of the external edge was revetted with large slabs especially in the N.E. quadrant.

The Circles were much overgrown with bracken and the interior of C possessed a large amount of sphagnum and a little heather. It was usually waterlogged in wet weather, the reason for which was the thick layer of iron pan. When 3 or 4 ins. of turf or moss was removed there was a thin black layer of humus and bracken roots resting upon 2 or 3 ins. of sandy subsoil. Below this was a layer of iron pan of substantial thickness which was continuous over the whole area with pockets here and there that extended more deeply into the underlying hard yellow shale.

Excavation of the entire interior of Circle C only revealed two cremation pits (see below), a stone ball (S2), an abraded quartz pebble (S13) and another pebble showing some flaking (S1).

III. Circles C (in foreground) and D (in background) from the north.

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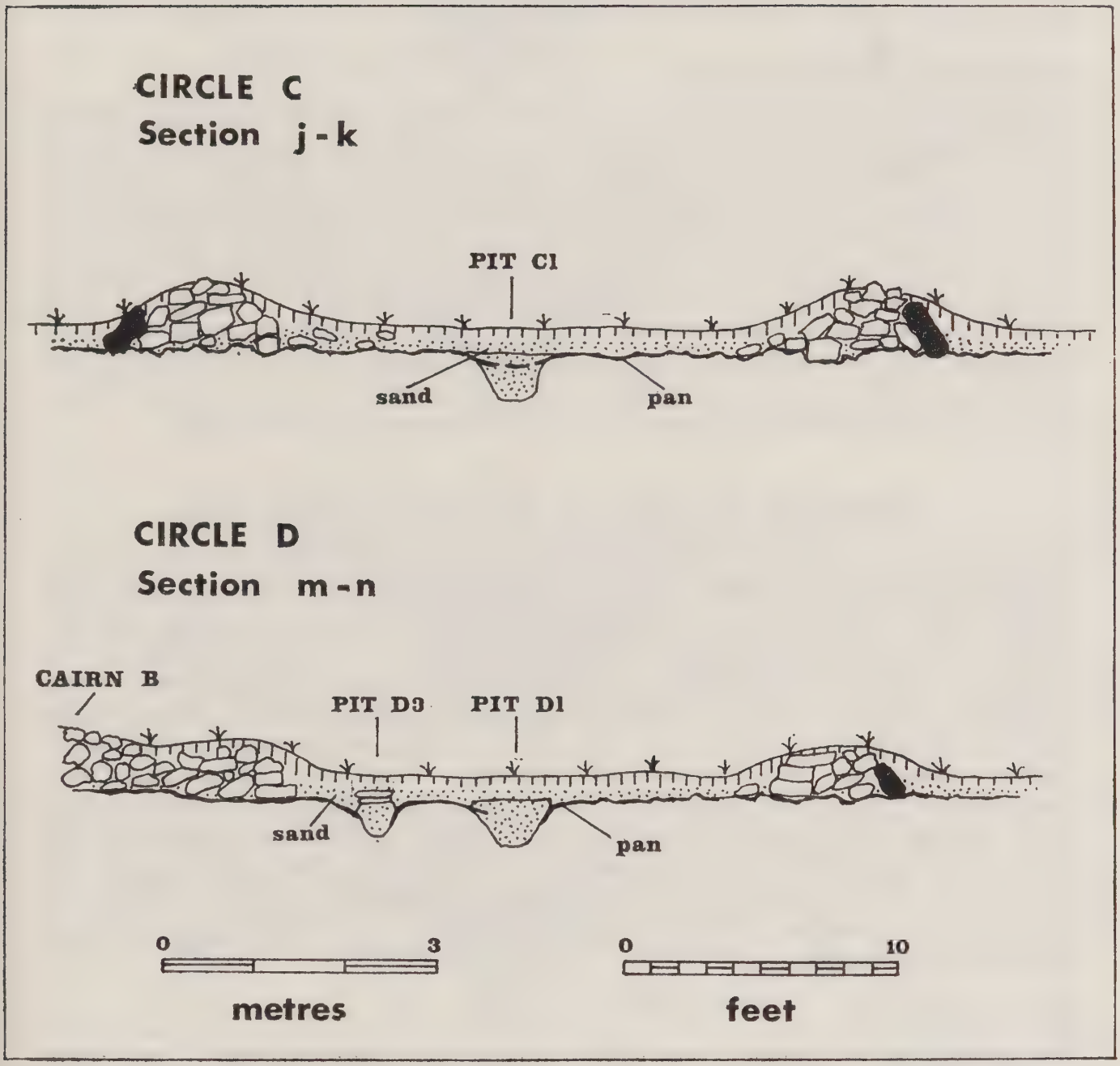
IV. Circles C (right) and D (left) from the west (Cairn B).



9. *Circles C & D: sections*

PIT C1 (Fig. 10)

Removal of the sandy subsoil of the interior disclosed the position of two small, steep-sided pits, roughly circular in plan. Pit C1, in a central position, measured 23 to 22 ins. in diameter and was sunk into the sandstone shale to a depth of 22 ins. The infilling was largely sand burnt red and containing fragments of charcoal, with, in the lower half, a mass of calcined bone (Appendix B) mixed with oak charcoal and sealed into a compact whole by iron pan, which had obviously formed after the insertion of the cremation. No flint or pottery was present.

PIT C2 (Fig. 10 and Plate VA)

The second and smaller pit was south of the central Pit C1 and 3 ft. from the stone bank. Its position was disclosed when a flat slab measuring 20 ins. by 13 ins. was raised. Another similar slab measuring 19 ins. by 16 ins. was found almost adjacent to the south and at the same level and may have originally been placed upon the first (as Pit D3 of Circle D). The first slab covered a pit 17 ins. by 13 ins. in diameter and inserted into the shaly sandstone to a depth of 15 ins. The sides of this pit were coated with hard iron pan to a thickness of an inch. Less than halfway down in the infilling of burnt sand, charcoal and small stones was an inverted urn (P5) small and undecorated. Not more than half-a-dozen fragments of calcined bone were found inside and only a trace of bone was found in the sandy infilling of the pit. No other finds were made.

CIRCLE D (Fig. 6 & Plates III & IV)

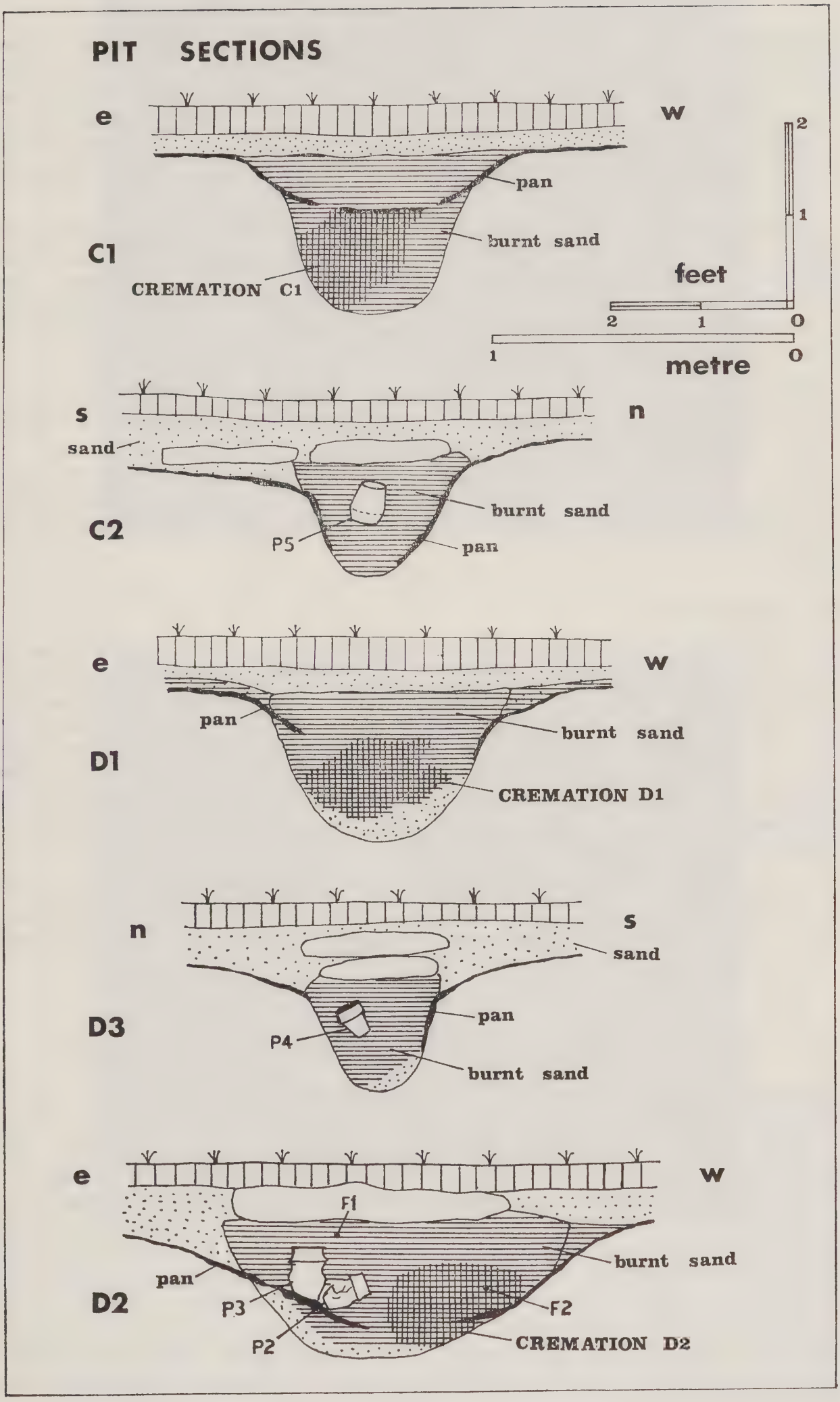
Circle D which adjoined Circle C on the south and Cairn B on the west was a little smaller than the former. The overall diameter was between 25 and 27 ft. It possessed a surrounding embankment of stones which, in general, was not quite as thick (about 4 ft. 6 ins.) and high (about 2 ft.) as that of Circle C. The interior of this bank on the east side of the circumference disclosed two or three courses of dry-stone walling. Much of the exterior was revetted by large slabs and was bonded with Circle D at the point of juncture. Excavation revealed a similar sequence of deposits within the interior. A turf layer of 3 or 4 ins. was succeeded by a sandy subsoil of 2 or 3 ins., below which was a continuous and thick deposit of iron pan. Below was hard yellow shale. Three cremation pits were found (see below) but the other finds from the interior were meagre: two stone balls (S4 and S10) and possibly part of a loom-weight (S9). Within the wall near the junction of the Enclosure A embankment and Circle D was a third stone ball (S3).

PIT D1 (Fig. 10)

The central pit of Circle D was slightly larger than that of Circle C and pear-shaped in plan. It measured 28 ins. from north to south and 20 ins. from east to west, and was inserted into the shaly sandstone to a depth of 20 ins. The infilling was chiefly burnt sand and containing fragments of charcoal. In the lower half, but a few inches from the base of the pit, was a solid mass of calcined bone (Appendix B) and oak charcoal sealed by iron pan. There was no trace of pottery or implements.

PIT D2 (Fig. 10 and Plate VB)

Immediately south-east of Pit D1 and 4 ft. 6 ins. from the encircling bank a flat pear-shaped stone slab was found below the turf. It measured 3 ft. by 1 ft. 9 ins. (tapering to 1 ft.) and 4 to 5 ins. in thickness. On raising this stone a mass



10. *Circles C and D: pit sections.*

of charred wood mixed with broken pieces of iron pan was found. This comprised the filling of a large oval pit measuring 4 ft. from north to south and 2 ft. from east to west with a depth of 18 ins. from base to bottom of the covering slab. At the western end of the pit 6 ins. below the slab was a mass of cremated bones (Cremation D2b, Appendix B) similar in quantity to that in the central Pit D1. A flint flake (F2) was found with this burial together with five burnt fragments of flint (F10).

Under the eastern end of the stone slab and $3\frac{1}{2}$ ins. below its base was a small Bronze Age overhanging-rim urn (P3) standing upright. Its base was firmly sealed by thick layers of iron pan which had to be carefully chipped away. The ware was so plastic that the vessel had to be refired *in situ* before removal. It contained a quantity of oak charcoal and at the bottom about 1 inch of calcined bone (Appendix B).

Almost abutting urn P3 to the west was a second small overhanging-rim urn (P2) broken and tilted towards the west. This contained charcoal and at the base a handful of cremated bone.

Other finds from this pit consisted of a single rim sherd (P3a), probably from another overhanging-rim urn, found on the northern edge of the pit, a flint flake (F1) found 2 ins. above the urn P3 and three flint chippings from the infilling.

PIT D3 (Fig. 10)

Pit D3 was located 4 ft. west of the central pit and 3 ft. 4 ins. from the bank of the Circle. This was covered by a flat stone slab measuring 20 ins. by 16 ins. by 3 ins., below which was a second slab 15 ins. by 15 ins. by 3 ins. Under the latter was a mass of burnt sand and charcoal forming the infilling of the pit which was from 28 to 25 ins. in diameter and 15 ins. in depth from the base of the lower slab. At 3 ins. below this slab was a small Bronze Age overhanging-rim urn (P4) tilted to the north. There was no trace of cremated bone with the urn, which contained a mass of oak charcoal, nor was any calcined bone to be found in the infilling. The urn was actually the only find from within the pit.

The sandy subsoil between the central Pit D1 and Pits D2 and D3 was heavily burnt and a pan-impregnated layer of charcoal rested upon this subsoil. A scatter of cremated bone extended through the subsoil from Pit D1 eastwards

LONG BANK OR "TAIL" E (Figs. 3 & 7)

This remarkable feature extends south-westwards from Cairn B for at least a distance of about 300 ft., although it is possible that a further 100 ft. or more could be added to its length, for the termination is indefinite and has been complicated by old trackways. The 300 ft. that can be readily accepted is straight and uniform in width for the greater part of the length—the width varying from 28 to 23 ft. and only in the last 30 ft. does the width dwindle away to 10 or 12 ft. The height of the bank is normally 24-26 ins. but this also dwindles to 10-12 ins. towards the south end. At a point about half-way along its length the bank has suffered serious mutilation particularly on the south-eastern side. It appears to have been robbed to provide materials for Cairn F. which is adjacent to the bank in this locality. The north-western edge of the bank is more clearly defined but this is partly the result of a disused trackway following the line of the bank.

VA. Urn P5 in Pit C2, Circle C.

VB. Urns P2 and P3 in Pit D2, Circle D

VIA. Enclosure A; south end of bank during excavation,

*VIB. Tail E; Trench E*1 *during excavation.*

TRENCH E1 (Figs. 6 and 7 and Plate VIB)

Two trenches were carried through the bank, of which the larger was situated near the junction with Cairn B. The bank was found to be 27 ft. wide and 2 ft. 6 ins. in height, of compact construction with large boulders some measuring over 2 ft. across. Here and there large slabs were set on edge and on the south-east side some attempt at a kerb appeared. On the north-west edge the kerb was vaguely defined and only three upright stones were found. Below the stones was a thick deposit of iron pan, more irregular and broken in the central area, and resting upon yellow sandy shale.

Ten small fragments of pottery (P10) were found under the stones on the line of kerb on the south-eastern edge. Their precise date is uncertain. A flint flake with a serrated edge (F7) and five unworked fragments of flint were found on the north-western side of the bank. Two flint chippings and several pieces of charcoal were found near the centre.

TRENCH E2 (not figured)

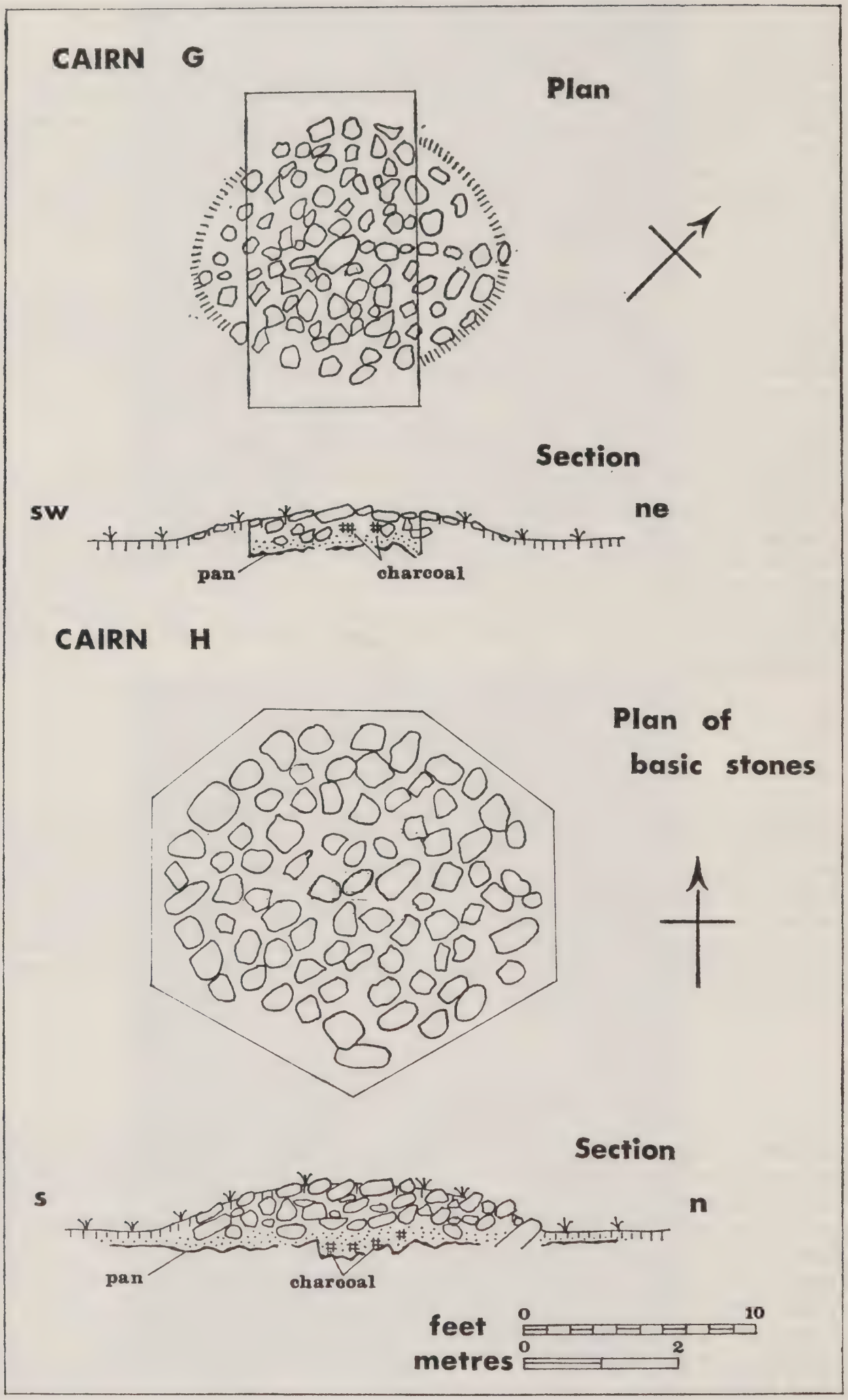
The second trench through 'Tail' E was 80 ft. south-west of Cairn B. The bank was 28 ft. wide and 2 ft. high at the centre, but the layer of stones was not so compact as in Trench E1. Most of the stones rested on burnt subsoil and an irregular deposit of iron pan at a depth of 10-18 ins. below the turf-line. There were several burnt stones and some charcoal in the bank. At the base of the stones at the north-west edge of the bank was a flint flake with a serrated edge (F8), but there were no fragments of pottery. Details of the pollen samples obtained from this trench are given in Appendix D.

CAIRN F (not figured)

This prominent round cairn, which was not excavated, lies adjacent to the south-east edge of Tail E at a point about midway along its length and 110 ft. south-west of Cairn B. It measures 40-42 ft. in diameter and stands 3 ft. or more in height, but is much mutilated and the centre is occupied by a large crater. It is probable that it was excavated by a Doctor Craster of Middlesbrough who is known to have opened many barrows on the moors of Great Ayton, Hutton and Eston during the middle of the 19th century but left no written record of his activities (*Early Man*, 16).

CAIRN G (Fig. 11)

Scattered over the moor in all directions around the chambered cairn complex are over 80 round cairns of small or medium size. Two of these—Cairns G and H—were selected for excavation. The former was actually the nearest of these small cairns to Cairn B and was only 115 ft. north-west of the centre of the latter. It was one of a small group of six and measured 14 ft. from north to south, 12 ft. from east to west and stood 15 ins. high at the centre. The stones of the cairn, many of them burnt, were piled around one large central slab measuring 18 by 15 ins., and rested on the sandy subsoil. A deposit of iron pan lay upon the shaly sandstone rock which was only 22 ins. below the apex of the cairn. Two tiny scraps of calcined flint (F11), together with a small piece of oak charcoal were the only finds.



11. *Cairns G and H: plans.*

CAIRN H (Fig. 11)

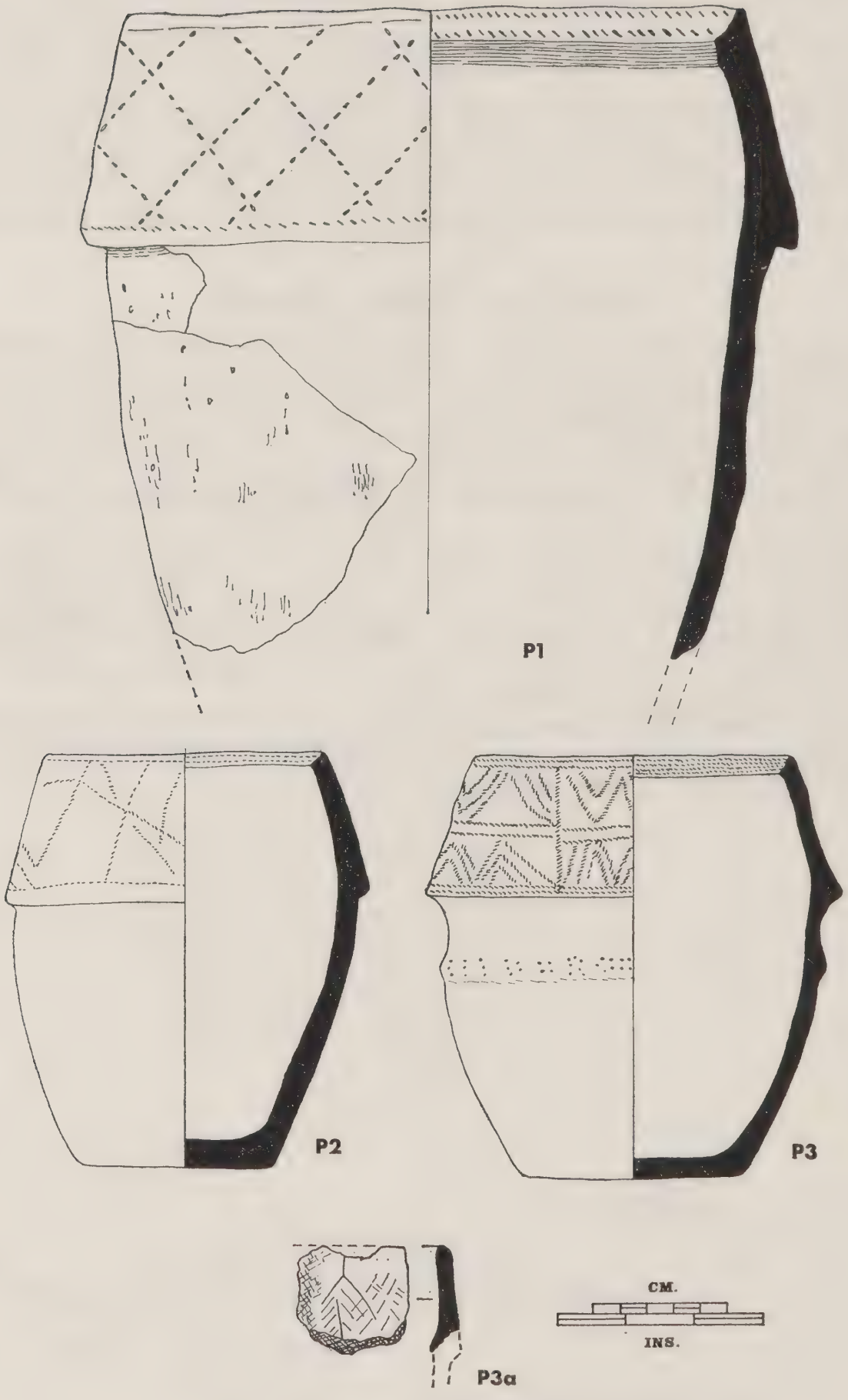
The second of the small round cairns to be excavated was one of a small group lying about 250-300 ft. south of the end of Tail E. It had a diameter of 16 ft. from east to west, 15 ft. from north to south and stood 24 ins. high at the centre. In construction it was chiefly of small slabs measuring 12 to 18 ins. across resting upon the sandy subsoil with a small outcrop on the northern edge. Many of the slabs had been burnt. Below the subsoil was an irregular layer of iron pan in which a small pocket contained a tiny flint chipping and oak charcoal. Just below the turf on the north side of the cairn were two unworked flint flakes (F12) and a burnt quartz pebble (S14) was found in a central position.

CIRCLE J (not figured)

At a point about 100 ft. south-west of Cairn B a slight circular turf-covered bank was visible adjacent to the east side of the fence and stone wall extending northwards from Gribdale (National Grid Reference NZ593113). It was actually astride the footpath following the fence and wall. The circle measured overall 36 ft. from east to west and 32 ft. from north to south with a bank 4 to 6 ft. in width and varying in height from 12 to 18 ins. In the south-east was a gap 2 ft. wide.

Excavation revealed that the interior was covered with a hard rubble layer sealed with iron pan at a depth of 4 to 6 ins. below the turf level. In the centre a small hole (post-hole?) 10 ins. in diameter and 12 ins. deep with some signs of stone packing. On the rubble in the south-eastern quadrant were two sherds (P12) probably of Middle Bronze Age ware. The surrounding bank of soil contained some stones of moderate size.

Circle J could not be classed with Circles C and D with their grave-pits, but may be a hut-site similar to those of Iron Age date excavated on Kildale Moor (Percy Rigg) about $1\frac{1}{2}$ miles to the east.



12. *Bronze Age cinerary urns.*

PART II
THE FINDS

The number of finds was disappointingly few in view of the extent of the excavations. Of these, only the Middle Bronze Age cinerary urns and pigmy cups were of importance but these vessels only offer dating evidence for the two Circles C and D and for the secondary burials inserted into Cairn B. The sherds from Tail E are probably earlier in date and the two scraps of pottery from Enclosure A probably belong to the Early or Middle Bronze Age but the dating of these fragments must be treated with reserve. The chamber of Cairn B produced no finds.

The flint implements were poor in quality and quantity. Only three (F4-F6) show good flaking, but the flint itself is poor, as is most of this material from the site, all of which has been derived from the local glacial drift. Flint implements of good quality, including arrowheads of leaf-shaped, barbed-and-tanged and triangular types, have been found on the adjacent moors.

The majority of the stone objects found during the excavations can be divided into the following categories: discs, balls and pebbles. The two shale discs from Cairn A1, although small, may be compared with stone discs found in a number of chambered tombs, e.g. Ty-Isaf, Brecknockshire (Grimes 1939), where ten came from various parts of the chambers and cairn, Pant-y-Saer, Anglesey (Scott 1933), and Clettraval, North Uist (Scott 1935). Their use is unknown. Stone balls have been present on many Neolithic sites including Clettraval (*ibid.*), Bryn yr Hen Bobl, Anglesey (Hemp 1936), Rinyo, Orkney (Childe 1939), from Irish tombs of the Boyne Culture and from Dorchester Culture sites in the south-east England (Piggott 1954, 220-1). The use of these stone balls is unknown but the Great Ayton balls and other rounded stones possessing abraded areas were probably used for pounding or hammering. Quartz pebbles abraded at one end have been found associated with Yorkshire Beaker Culture finds in Antofts Windypit, near Helmsley (*Hist. Helmsley*, 357, fig. 5, no. 7) and on Beacon Hill, Flamborough (Moore 1964, 196) where a hoard of 56 were discovered. Abraded and unused quartz pebbles have also been recorded from East Riding barrows (*Forty Years'*, 204, 229). They can be compared with the utilised pebbles found in Bryn yr Hen Bobl (Hemp 1936, Fig 6, nos. 5 and 6).

POTTERY (Figs. 12 & 13)

P1 Overhanging-rim urn (upper half), medium size. Grey-buff flaky ware, crushed quartz grit in fabric, corded lattice decoration on rim. Rim diameter at mouth 9.5 ins. Height probably 12 to 14 ins. Found inverted over Cremation B1 in Cairn B.

P2 Overhanging-rim urn (restored), small. Buff ware, erratic corded lattice decoration on rim, two lines of incisions inside lip. Rim diameter at mouth 4 ins., base diameter 2.75 ins. Height 6 ins. Found broken and on side near P3 and containing a few pieces of calcined bone in Pit D2, Circle D.

P3 Tripartite overhanging-rim urn, small. Buff-brown ware, profusely decorated with corded chevrons and horizontal lines of cording on rim, four rows of incisions inside lip and lines of three to five incised dots around girth cordon. Rim diameter at mouth 4.5 ins., base diameter 3 ins. Height 6.25 ins. Found containing Cremation D2a and standing upright under large slab covering Pit D2, Circle D.

P3a ? Overhanging-rim urn, fragment. Rim sherd in red-brown ware, flaky and burnt, faint incised herring-bone decoration (*cf.* pigmy cup P6). From north side of Pit D2, Circle D.

P4 Overhanging-rim urn, small. Orange-buff ware, thick, well-fired, decorated with corded lattice and lines of similar cording inside bevelled lip. Rim diameter at mouth 4.25 ins., diameter at base 2.75 ins. Height 5.5 ins. Found containing oak charcoal and a few tiny fragments of calcined bone (Cremation D3), tilted under two flat slabs in Pit D3, Circle D.

P5 Small plain shouldered urn. Light buff flaky ware, thick walls and thicker base. Widest at shoulder, which possesses slight suggestion of collar, bevelled rim. Entirely undecorated. Rim diameter 4.25 ins., base diameter 3.1 ins. Height 5.5 ins. Found inverted over charcoal and a few very fragmentary calcined bones under a flat slab in Pit C2, Circle C. A similar urn was found at the foot of a standing stone at Glynllivon, Caernarvonshire (Grimes 1951, 108, fig. 34). From Painsthorpe Wold Barrow 102 in E. Yorkshire Mortimer found a small undecorated urn 4 ins. high, but possessing a rim with a decided overhang (*Forty Years*', 124, fig. 306).

P6 Pigmy cup (upper part). Hard red-buff ware, refired in cremation, cord decoration on rim top and for $\frac{3}{4}$ ins. of exterior below rim top, incised chevrons, herring-bone and square patterns on body. Pierced by a single squarish hole 3/16th ins. wide in central position on body. Rim diameter 3.25 ins. Height 2.25 ins. Found in five fragments (base and much of wall missing) with Cremation B2, Cairn B.

P7 Pigmy cup (restored). Soft thick orange-red ware, decorated with cord-impressed double horizontal lines, and two rows of oblique lines, two rows of incisions inside lip. Rim diameter 3 ins., base diameter 2.75 ins. Height 1.75 ins. Found in fragments with Cremation B3, Cairn B.

The following fragments are not figured:

P8 Scrap of red ware akin to that of P6. From Enclosure A, bank.

P9 Scrap of good brown ware probably akin to P10. From Pit A2, Enclosure A.

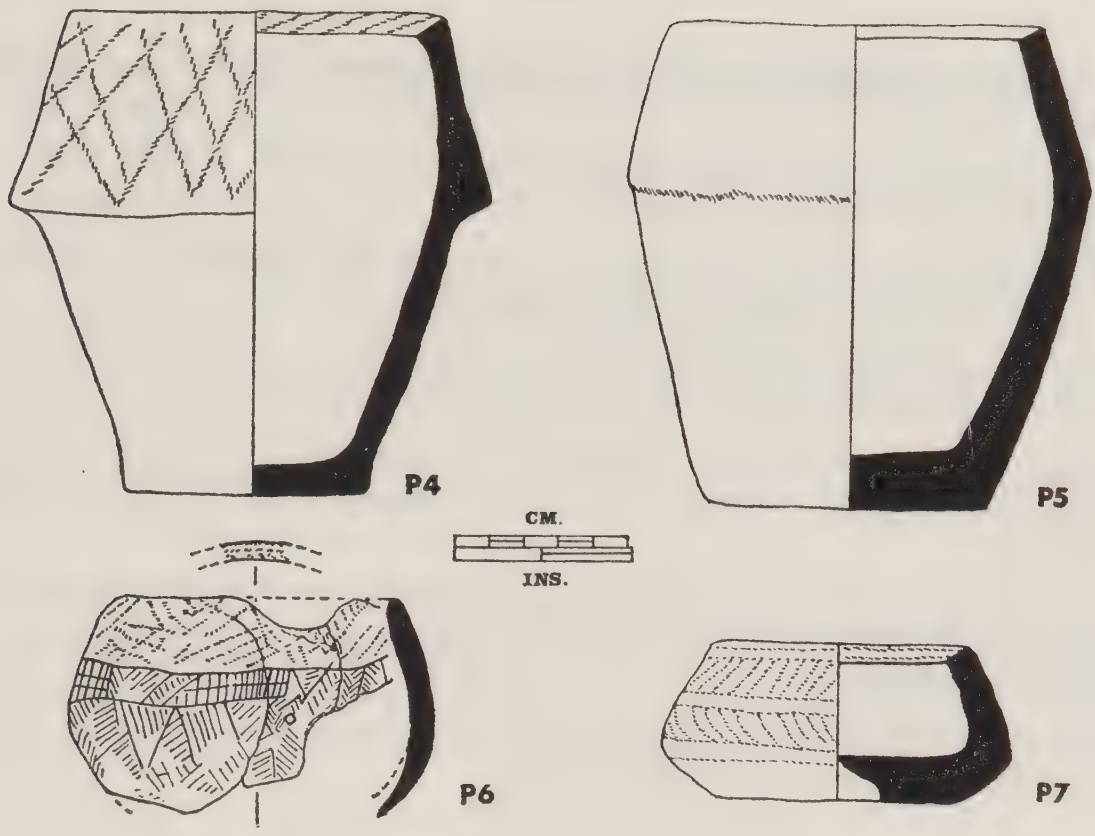
P10 Ten fragments of thin, well-fired, undecorated, buff-brown ware with quartz and whitish grit, smooth exterior and black to dark brown core and interior. No rim sherds. Very worn. Akin to Beaker ware but not unlike some Neolithic A ware from E. Yorkshire. From below S.E. kerb in Trench E1, Tail E.

P11 Three scraps of black ware, flaky and crumbling, impregnated with grass or fibre. Possibly Early Iron Age. Found only two or three inches below the turf covering, Cairn B.

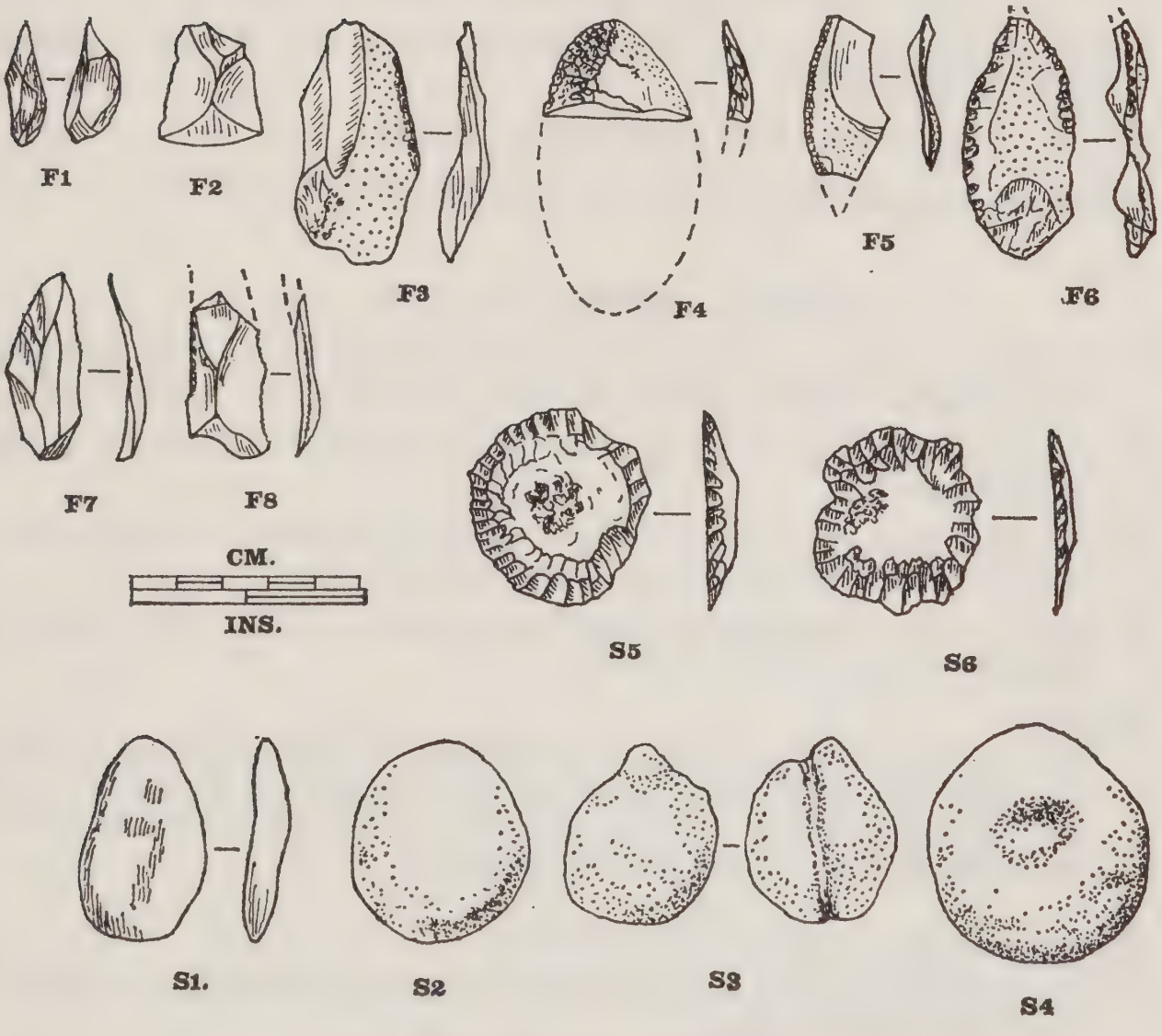
P12 Two wall sherds in thick, coarse, flaky grey-buff ware (*cf.* P1 above). Found within Circle J.

FLINT IMPLEMENTS (Fig. 14)

F1 Pointed flake of dark brown flint about 1 inch long. Found 2 ins. above P3 in Pit D2, Circle D. (Three unburnt and unworked chippings in dark grey flint were also found in Pit D2).



13. *Bronze Age cinerary urns and pigmy cups.*



14. *Flint and stone implements.*

F2 Flake of mottled grey flint with serrated edge, length 1 inch. From Cremation D2b, Circle D.

F3 Flake knife in mottled grey flint, worked on one edge. Length 2 ins. From near P6, Cremation B2, Cairn B.

F4 Plano-convex knife-scraper, pressure-flaked and smoothed, fragmentary. Found behind passage wall of chamber, Cairn B.

F5 Flake knife in honey-brown flint, one edge well-worked, polished on one face, fragmentary. From sandy subsoil, Enclosure A.

F6 Flake knife in brown flint, well-flaked on both edges, length 2 ins. but tip of one end missing. Found 3 ft. N.E. of 'Headstone' (Stone 1) of chamber, Cairn B.

F7 Flake in clear brown flint with one serrated edge, length 1.75 ins. From N.W. edge of Tail E in Trench E1. (Five unworked flint chippings were also found in same area).

F8 Flake in red-brown flint with one very finely-serrated edge and one saw-like edge, broken. From Trench E2, Tail E.

The following have not been figured:

F9 Large fragment of mottled grey flint measuring 5 x 5 x 1 ins. from which long blades have been struck. From N.W. edge of Cairn B.

F10 Five fragments of calcined flint in poor condition. Found with Cremation D2b, Pit D2, Circle D.

F11 Two tiny pieces of calcined flint. From Cairn G.

F12 Two unworked flakes and one tiny chipping of flint. From Cairn H.

STONE OBJECTS (Fig. 14)

S1 Pear-shaped smooth pebble in hard close-grained brown rock, showing some flaking. Length 1.75 ins., thickness 0.25 ins. From within Circle C.

S2 Ball of close-grained stone from the glacial drift, $1\frac{1}{2}$ ins. diameter. Found within Circle C.

S3 Knobbed ball with groove in coarse-grained sandstone. Found within wall near junction of Enclosure A and Circle D.

S4 Ball of very coarse-grained sandstone, abraded on one side, diameter 2-2.25 ins. Found within Circle D.

S5 & S6
Two shale discs, flat and smooth on underside well-flaked around the edge and with signs of working on flat centre of upper-side. Resemble round flint scrapers. Diameter 1.5 ins., thickness 0.25-0.5 ins. Found associated with oak charcoal in Cairn A1 of Enclosure A.

The following objects have not been figured:

S7 Smooth polished stone in fine-grained brown rock. Measures 3.5 x 2 x 0.75 ins. Found within Cairn B.

S8 Fragment of stone axe or adze in fine-grained reddish sandstone, smoothed and? burnt. Probably originally about 2 ins. wide and 1.75 ins. thick. From within Circle C.

S9 Fragment of shaped grey clay-like stone, possible part of a loom-weight. Found within Circle D.

S10 Stone ball, diameter $1\frac{1}{2}$ ins. (Two irregular stone balls were also found in the sandy subsoil of Enclosure A). Found within Circle D.

S11 Abraded stone in fine-grained rock of glacial drift origin. Length 4 ins., thickness 3 ins. From near Circle D.

S12 Small sandstone boulder abraded at one end. Length 4.5 ins., thickness 3.5 ins. Found within Cairn B.

S13 White quartz pebble abraded at one end. From within Circle C.

S14 As last from near Cremation B3, Cairn B. (Another quartz pebble was found with Cremation B3, one in Cairn H, and several were found in the sandy subsoil of Enclosure A).

PART III
DISCUSSION

From the evidence in Parts I and II it is clear that the Great Ayton Moor monument was a complex burial site in use during more than one period. It would appear that the chambered Cairn B and the Tail E were the first to be built, presumably during the Neolithic Period and, according to Prof. Dimbleby (Appendix C), at a time when the locality was covered with mixed forest in which traces of clearance were beginning to become apparent. However, the pollen analysis does suggest that Cairn B and Tail E were not constructed at identical times.

Chambered cairns have hitherto been unknown in north-east Yorkshire, although it is probable that more examples remain to be discovered on the North York Moors. Elsewhere in Yorkshire only one such tomb has been examined—the chambered long cairn on Bradley Moor, north-west of Keighley (Raistrick 1932; Butterfield 1939). This long pear-shaped mound measures 230 ft. by 80 ft. with its long axis extending N.W. to S.E. and towards the higher S.E. end was a large box-like cist 6½ ft. by 3 ft. formed chiefly from large slabs set on edge and with a massive capstone. It contained the human bones of single inhumation and cremated remains were also present. One small piece of flint and some burnt stones were the only other finds. At the ends of the cist was dry stone-walling, there was a suggestion of an entrance passage and certainly traces of a false portal. Also, the cairn, consisting of a mass of boulders, possessed large upright slabs and the possibility of a kerb similar to that at Great Ayton.

Resemblance between the Bradley Moor and Great Ayton tombs is obvious. No burial was found within the Great Ayton chamber but in the acid conditions prevailing on the Cleveland Hills a single skeleton could have disappeared. In both instances there was a noted absence of pottery and other relics. The large cists or small chambers, some with rudimentary passages, of certain megalithic tombs found on the Derbyshire moorlands (Daniel 1950, 83-6; *O.S. Trent Basin Map*; Manby 1958) resemble the chamber and passage at Great Ayton. This group of Derbyshire tombs seems to possess a mixture of megalithic features coming from the west coast of Britain.

Professor Piggott (1954, 270-1) has placed the Bradley Moor cairn with some fifteen or more long cairns extending from Yorkshire to Banffshire which cannot be regarded as related to any specific group of chambered tombs. It is suggested that these long cairns are the possible counterparts, in stony regions, to the unchambered long barrow which extends northwards into Yorkshire.

The probability is that the chamber of the Great Ayton Moor cairn was an inverted-V in section with the side-stones inclined inwards to meet at the top and therefore lacking the normal capstones. This is an unusual characteristic but examples of this type, although very rare, have been noted in Finistère, France (Daniel 1958, 37; Giot 1960, 101-2, Plates 37 and 38).

The low bank Tail E projecting over 300 feet south-westwards from the chambered cairn is an unusual but not unique element of the Great Ayton complex. It does bear resemblance to the Long Mound of Maiden Castle, Dorset, which is over one-third of a mile long (Wheeler 1943, 18-24) and to the two 'bank barrows' of Dorset with their length of 600-645 ft. (*Dorset Barrows*, 77, 80). But a closer parallel is to be found at the chambered cairn of Bryn yr Hen Bobl in Anglesey (Hemp 1936). This tomb has a small almost rectangular chamber, about the size of that of Great Ayton, within a large kidney-shaped cairn

140 ft. in diameter (over twice that of Great Ayton). The existing chamber appears to have had another alongside. Extending southwards from the cairn and with which it is structurally bonded is an elongated platform or 'terrace' 330 ft. long, 40 ft. wide and 2 to 3 ft. high, bounded by dry-walling. In length it agrees with the Great Ayton Tail E but is somewhat wider and higher.

It has been stated that there are no parallels to the Bryn yr Hen Bobl 'terrace' but at least one other example occurs. This is at the Long Low tomb near Wetton in Staffordshire, described by Bateman (*Ten Years'*, 121, 144, 146; *Vestiges*, 182 and see Jewitt 1870, 9, Fig. 9). Here was a cairn 90 ft. in diameter containing a stone cist of megalithic character in which were the skeletal remains of thirteen individuals and three leaf-shaped arrowheads. Extending over 600 ft. south-westwards from this cairn was a stone bank or 'ridge' which terminated in a smaller cairn built as an integral part of the ridge. The latter was 45 ft. wide and 4 to 4½ ft. high in places and contained a central wall built of large stones over 4 ft. high. Cremations were found in this ridge and also in the second cairn.

Banks or ridges connecting pairs of cairns or barrows are also known elsewhere. H. O'Neill Hencken (*Arch. Cornwall*, 74) describes two large barrows near Newquay in Cornwall with a connecting bank of earth. Both barrows contained large cists with unburnt skeletal remains and in one was a Beaker type axe-hammer. On the North York Moors are a number of small round or oval-shaped cairns with stony banks or 'tails' projecting from the cairns or connecting pairs of cairns. Examples of these can be found on Iron Howe, Snilesworth (*Hist. Helmsley*, Fig. V, Cairns 82, 83 and 84) and on Bumper Moor, Hawnby (unpublished report in Scarborough Museum, Cairns 158, 159, 168, 169, etc.) but it is difficult to decide if these banks are essentially related to the cairns or merely represent fragments of ancient ruined field boundaries.

The paucity of grave-goods and other finds from Cairn B, apart from the three secondary burials of the Middle Bronze Age, is disappointing although the Beaker-ware type of sherds (P10) from below the Tail E suggest that this feature may belong to the period of the late Neolithic-Beaker overlap. The lack of finds is repeated at Bradley Moor and at the long barrows of north-east Yorkshire situated on Kepwick Moor (*British Barrows*, 509-10, No. CCXXVII) and on Yearsley Moor (*ibid.* 550-3, No. CCXXXIII)—providing that the cist found in the latter was secondary.

The Circles C and D on the eastern side of Cairn B were provided with useful dating evidence in the form of Middle Bronze Age burials. This type of burial enclosure occurs widely on the North York Moors and was first described by Canon J. C. Atkinson (*Gent. Mag.*, Vol. XIV, N.S. 440-4) after the excavation of an example on Danby Rigg situated in a large cairn cemetery. This possessed a circular bank of earth and stones 6 ft. wide and 3½ to 4 ft. high enclosing a space 42 ft. in diameter. Four slabs 5 or 6 ft. high stood around the inner side of the bank. In the centre of the enclosure, at a depth of 18 ins. Atkinson found two inverted Middle Bronze Age urns covering cremations. Another similar circle examined by Atkinson on Danby Rigg, 60 ft. in diameter, possessed a large central pit destitute of finds. He mentions a further unexcavated example on Danby Low Moor and among others that have been noted on the North York Moors are those at Thorn Key Howes, Fylingdale Moor (*Early Man*, 103), near Ravenscar (Greenwell 1890, 41) Duncombe Park (*Hist. Helmsley*, 36) and Iron Howe, Snilesworth (*ibid.*, Fig. V). They are often associated with cairn cemeteries and it has been suggested that they represent the initial stages in the construction of a bowl barrow or large cairn containing inner kerbs or walling, such as the Burton Howe barrows (*ibid.*, 32-4, 374-5, Figs. 12 and 13) or the Brotton Warsett barrow (*Early Man*, 71-2, Fig. 24) both within 8 miles of

Great Ayton. But not all of the circular enclosures with banks of stone and earth that occur in north-east Yorkshire have been used for burial purposes. Circle J described above has already been shown to contain no central pit and was probably the site of a hut. A mile away on Kildale Moor (Percy Rigg) the recent excavations of R. Close have disclosed several circular hut-sites of the Iron Age (*YAJ*, XLI, 171, 326), which, before examination, resembled the Great Ayton circles and are situated near to an extensive cairn cemetery (Ashbee 1953).

In two respects Circles C and D differ from other local examples—they adjoin, and they also abut a round cairn.

The oval-shaped Enclosure A provides the greatest problem of the Great Ayton site. Three similar embanked ovals occur in the same area of North Yorkshire (see Appendix A) but these are unexcavated and we have no clue to their age and purpose. Furthermore the Great Ayton oval enclosure is the only one bonded into a cairn and possessing smaller cairns incorporated in its bank. The N.E./S.W. alignment of Tail E which passes almost centrally through Cairn B coincides closely with the long (N.E./S.W.) axis of Enclosure A. This does suggest that Enclosure A was deliberately sited after the construction of Tail E and Cairn B. Furthermore the situation of Circles C and D which is out-of-balance with the plan of the other elements of the monument may have been dictated by the position occupied by Enclosure A. In other words, Enclosure A could have been built after Tail E and Cairn B, but before Circles C and D. Unfortunately, excavation has produced no decisive evidence on this point, although the two scraps of pottery found in the bank and Pit A2 of the enclosure suggest a Bronze Age date. The pits were probably graves in spite of the lack of remains and are not unlike the rock-cut grave found below a small cairn on Kildale Moor (Ashbee 1953) which also contained no traces of a burial.

The three cairns in the bank of Enclosure A present a further puzzle as it was impossible to establish their exact relationship to the enclosure. They could have been in existence before the enclosure and incorporated into the bank during its construction, added at a later date or erected at the same time as the bank. Again the lack of finds was sorely felt. The numerous small cairns scattered about the surrounding moorland may well belong to the same period, but here again the excavation of two nearby examples, Cairns G and H, has been unproductive.

Cairn F, adjacent to Tail E, appears to have been built at least in part, out of material robbed from the latter and is, therefore, later in date. It can be regarded as a normal Bronze Age bowl barrow.

APPENDIX A

EMBANKED OVAL ENCLOSURES IN NORTH EAST YORKSHIRE

By R. H. Hayes

Three oval enclosures resembling Enclosure A of the Great Ayton monument can be recorded for north-east Yorkshire. The type was first noted by Canon J. C. Atkinson (*Gent. Mag.*, May, April 1863) and all three are recognised by Elgee (*Early Man*, 143, 146).

I Moorsholm High Moor, Moorsholm parish. NZ 687119. Situated on the moors 5½ miles east of the Great Ayton site at an altitude of about 810 ft. Measures 94 ft. from N. to S. and 38-40 ft. from E. to W. The bank of earth and stones, which is without gaps, is 20 ft. wide at the ends, 12-14 ft. wide near the centre and 3-4 ft. high. There is an outer shallow ditch 6 ft. wide. It appears to have been undisturbed apart from signs of a pit in southern half, more or less central, which discloses burnt stones and charcoal. There are a number of round cairns on this moor, the nearest about 250 ft. W., but there is a cairn cemetery about 600 ft. N.W.

II Danby Low Moor, Danby parish. NZ 700111. Situated on the moors 6½ mile E. of Great Ayton Moor and 1 mile S.E. of the Moorsholm site, at an altitude of about 865 ft. Measures 125 ft. from N.E. to S.W. and 65 ft. in width at the centre. The bank stands 3-4 ft. high and is about 10 ft. wide at most points. There are no gaps in the bank. The outer ditch is 6 ft. wide with a counterscarp. The central area is stony and appears undisturbed. In the same general alignment (S.W./N.E.) are two round cairns to the N.E. and one to the S.W. extending to an overall distance of about 600 ft. Another half-dozen cairns are within 600 ft. of the enclosure.

III Lingra or Lingrow Howe, Hinderwell parish. NZ 804170. This enclosure was situated 13½ miles E.N.E. of the Great Ayton example, near the cliff-edge between Runswick Bay and Port Mulgrave at an altitude of about 300 ft., shown on several maps as a Long Barrow. It is described by Elgee (*Early Man*, 143, 146) from information supplied by the late Mr. W. Hornsby as 'an oval stone-walled enclosure, 96 ft. in diameter, and surrounded by an oval outer ditch'; 'three hut-pits lie within'. This site has been ploughed down.

APPENDIX B

THE GREAT AYTON MOOR CREMATIONS

By T. F. Spence
Department of Anatomy, The University of Birmingham

INTRODUCTION

Human cremations of the past have recently aroused some interest, since careful examination may reveal a variety of information. Previously incinerated remains were considered to be too fragmentary to give any results. However, it has been shown that if every fragment is collected and recorded it may be possible to deduce from such material the number of individuals buried and sometimes their sex and age as well as certain pathological features. The investigations are not only of archaeological and anthropological interest, but also of medico-legal value since they are a further method of identifying charred human remains. The present account relates to a study of material from Great Ayton Moor. The method of examination is that followed by Lisowski (1957, 1963) and Lisowski and Spence (1963a, 1963b, 1963c and 1963d).

MATERIALS AND METHODS

The cremated remains were washed on a sieve of 2 mm mesh (Atkinson, 1953) so as to clean off the soil and vegetable matter. The material was then dried, foreign matter and teeth sorted out and the bone dust sieved off. Finally the remains were grouped according to the skeletal parts they belonged to. An attempt was then made to estimate and diagnose the number cremated, their sex and their age from the relevant osseous material present.

RESULTS

Since each of the cremations is rather limited in amount very little could be said about the number of individuals cremated, their sex could not be diagnosed and their age could only be assessed in two cases.

CREMATIONS FROM CAIRN B

Cremation No. B1

Small amount of whitish, brittle fragments mixed with charcoal. A few unidentifiable long bone pieces are present.

Number cremated, sex and age unknown. ? Part of other cremations.

Cremation No. B2

White to grey fragments, many of which are large. Numerous pieces are twisted and show elliptical cracks. On the whole the remains look as if they have been crushed subsequent to cremation. The skull is represented by many vault fragments showing serrated sutural edges and vascular grooves; the petrous portions on the right and left temporal bones; part of the body of the sphenoid; a fragment of the right ramus of the mandible. Vertebral fragments of the cervical region are also present, as well as a humeral condyle and two? right midradial pieces that could be fitted together. The thorax is represented by many costal elements. The upper limb is represented by part of a humeral head, a condyle and an epicondyle, two? right midradial pieces that could be fitted together and phalangeal fragments. The upper end of the left tibia and the right and left patella are all that remains of the lower limbs. Many unidentified long bone fragments are present too. Number cremated: one. Sex and age unknown.

Cremation No. B3

Grey-white fragments of medium size, few in number showing elliptical cracks as well as distortions. The skull is represented by vault fragments showing serrated sutural edges. Several costal elements as well as unidentified long bone pieces are also present.

Number cremated: one. Sex: unknown. Age: ? young adult

CREMATION FROM CIRCLE C

Cremation C1 from Pit C

This single cremation consists of numerous unidentifiable long bone and other miscellaneous unidentifiable fragments.

Number cremated, sex and age unknown. Probably part of one or other of the main cremations.

CREMATIONS FROM CIRCLE D

Cremation D2a from Urn P3, Pit D2

Grey-white fragments, small in size with typical transverse and elliptical cracks. Some of the pieces are distorted. The skull is represented by vault fragments and pieces of the maxilla, some of the latter show tooth sockets. Several unidentifiable vertebral bodies, small terminal phalanges of the fingers, a fibular fragment and a few unidentifiable miscellaneous pieces are also present.

Number cremated:one. Sex: unknown. Age: probably child.

Cremation D2b, Pit D2

Grey-white, brittle fragments with usual cracks, all are unidentifiable.

Number cremated, sex and age unknown.

Cremation D3 from Urn P4, Pit D3

A few unidentifiable fragments mixed with charcoal and sand.

Number cremated, sex and age unknown.

Cremation D1 from Central Pit D1

Unidentifiable fragments, grey-white in colour.

Number cremated, sex and age unknown.

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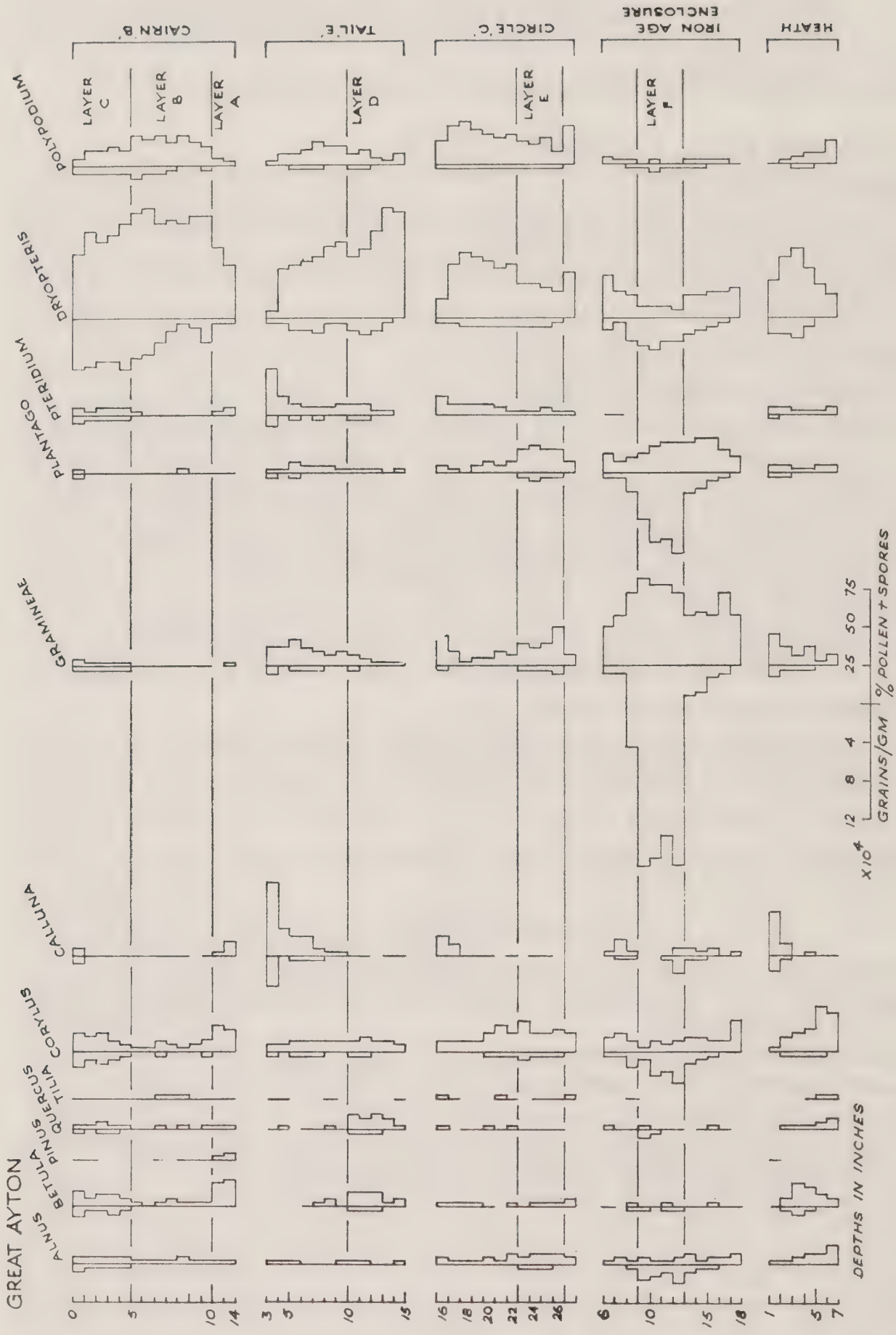
———— 1963 (unpublished); 'The examination of human cremations'.

———— and Spence, T. F., 1963a (in press); 'The cremations from Weird Law'.

———— 1963b (in press); 'The cremations from Kirkburn'.

———— 1963c (unpublished); 'The Bronze Age cremations from Peterborough'.

———— 1963d (unpublished); 'The Staxton Beacon cremations'.



15. *Pollen diagrams.*

APPENDIX C

POLLEN ANALYSIS

By G. W. Dimbleby

University of London Institute of Archaeology

Earthworks of Bronze Age and later date are abundant on heathland and moorland, but no structure of certain Neolithic date has yet been found on such a site in this country. A Neolithic earthwork would offer a valuable opportunity of determining the contemporary vegetation if a buried surface could be found beneath it. This earthwork aroused interest because it was apparent that the cairn (B) was earlier than the adjacent circles (C & D)—associated with urn burials—and the tail (E) was clearly earlier than an adjacent round barrow (F).

In none of the sections was there an easily recognisable buried soil, so that the possible positions of buried surfaces had to be estimated, and the sampling arranged to straddle the estimated level. The following series of samples, all at one-inch intervals, were taken:

(a) Cairn B, N.W. quadrant

On the assumption that the basal stones of the cairn rested on the old land surface, a series was taken from the underside of a large flat stone to a depth of 14 ins. below.

(b) Tail E, Trench E2

A series was taken through the stony make-up of the tail and into the undisturbed sand beneath, a total of 20 samples.

(c) Circle C, S.E. side

A series of 15 samples was taken to straddle the estimated level of the soil buried beneath the bank of the circle.

(d) Iron Age Enclosure

Opportunity was taken at the same time to section the bank of a rectangular enclosure, apparently Iron Age, lying about $\frac{1}{4}$ mile E.S.E. of this monument. Twelve samples at one-inch intervals straddled the buried soil surface which in this case was recognisable.

(e) Heath

A series of sixteen samples was taken down a profile in the undisturbed heath soil.

On this sampling pattern it was hoped that there would be two spectra from possibly Neolithic surfaces, one from the Bronze Age and one from the Iron Age. The heath profile was designed to key these different periods into one series. Modern spectra would be provided by the raw humus of the 'tail' and heath series.

In addition many spot samples were taken (by the excavators) from points of archaeological significance, but with two exceptions (K, Z) these proved to be deficient in pollen or clearly contaminated by more recent pollen. Samples K and Z were both from the level of the chamber floor of Cairn B, K being from beneath the walling, where the passage enters the chamber, and Z from just outside the chamber.

RESULTS

With the exception of the Iron Age soil, all these materials proved disappointingly poor in pollen. Fern spores (*Dryopteris* type and *Polypodium*) were in excess, a condition often associated with the rapid breakdown of the less resistant pollen types. Nevertheless, even though some of the percentages given in Table 1 are based on inadequate tree-pollen totals, they present a

reasonably coherent sequence. The diagrams in Fig. 15 are in the form of double histograms showing both the amounts of pollen (absolute frequency) and the percentages (of total pollen plus fern spores) for all samples. This method of presentation is particularly suitable for mineral soils.

The profile from beneath the cairn can be divided into three layers according to the pollen diagrams. These layers have been labelled A, B and C. Layer A is characterized by relatively high proportions of birch (*Betula*), hazel (*Corylus*), pine (*Pinus*) and heather (*Calluna*). In contrast, layer B is deficient in most pollens, but has a great abundance of fern spores. Layer C, on the other hand, shows increased proportions of pollen relative to spores, and in particular shows a small but definite increase of grasses (*Gramineae*) and plantain (*Plantago*).

Though in individual samples the counts of pollen—as distinct from fern spores—are statistically inadequate, it is apparent from the diagram that each layer shows uniformity within itself. In compiling Table I, therefore, the counts for each layer have been summed.

The Tail E profile falls into two layers, with a clear junction at 10 ins. It is interesting to note that heather pollen is unimportant below this level, but above it rapidly increases showing that it became dominant, after the tail was constructed. The counts in the layer below 10 ins. (D) have been totalled for inclusion in the Table.

The buried soil surface in the circle section is clearly covered by samples 23-26, in which the percentages and the frequencies both contrast with the material above and below. Similarly in the Iron Age enclosure the buried top soil lies between 9 and 13 ins. Both these layers have been treated as above to provide the appropriate data for Table 1.

In addition, the analyses for the raw humus of the tail and of the heath profile have been amalgamated to give the column headed 'Modern Turf'. These seven columns provide the basic data for interpretation, but also included are the two samples K and Z referred to above. Both came from near the bases of large stones in the passage.

INTERPRETATION

Layering in mineral soils, as seen in the Cairn profile, is not an uncommon phenomenon though the causes are still conjectural. In this case each layer has a distinct tree pollen spectrum. Layer A has high percentages of birch and pine, whilst alder (*Alnus*) and lime (*Tilia*) are poorly represented in comparison with Layer B above. This analysis has a Boreal (Zone VI) flavour, but the presence of traces of hornbeam (*Carpinus*), beech (*Fagus*) and spruce (*Picea*) suggest some extraneous influence.

Layer B shows a mixed oak forest spectrum, with a high proportion of lime. Even though elm (*Ulmus*) is absent (a usual condition in Zone VII spectra from these moors) it is likely that this layer can be attributed to the Atlantic period (VIIa). In contrast, lime is less well represented in Layer C which could indicate a Sub-boreal date (VIIb) for the layer on which the cairn was built. Although heather, grasses and plantain become more strongly represented in this layer, all these three layers have now NTP/TP ratios, indicating that the site was dominated by forest.

The soil buried under the tail does not match closely with that under the cairn. It contains less alder and more oak in the tree fraction, but the proportions of grasses, plantain and non-tree pollen as a whole are about the same. No reliable construction can be put on this, though it might suggest a different phase in the forest regeneration cycle, and therefore imply that the tail was built at a different time from the cairn, though in the same general period.

TABLE 1

PERCENTAGES OF TREE POLLEN

Layer	Possibly Neolithic or earlier				Bronze Age	Iron Age	Modern Turf	Spot Samples	
	Cairn B			Tail E	Circle C	En-closure		K	Z
	A	B	C	D	E	F			
Alnus	8	36	32	9	67	65	40	31	52
Betula	65	31	45	46	19	18	20	46	30
Carpinus	1	—	—	—	—	—	1	1	—
Fagus	1	—	—	—	—	—	—	—	—
Fraxinus	—	—	1	—	—	1	5	—	—
Picea	1	—	—	—	—	—	+	—	—
Pinus	14	1	+	—	—	—	5	+	2
Quercus	8	16	18	45	8	16	26	20	14
Tilia	2	16	4	+	6	—	—	—	2
Ulmus	—	—	+	—	—	+	2	1	—
Corylus	72	65	68	39	148	95	49	72	79
Gramineae	5	4	21	24	165	939	345	105	106
Cereals	—	—	—	—	+	+	+	—	—
Plantago	4	6	9	10	158	311	75	26	38
Calluna	22	3	9	3	5	23	1076	126	143
Non-Tree Pollen (NTP)	38	21	49	49	381	1438	1630	298	354
Total Tree Pollen (TP)	127	323	387	241	97	79	84	99	63

The Bronze Age spectrum (Layer E) shows certain clear differences. Alder has increased at the expense of birch and hazel is relatively more important. The countryside was by this time much more open (NTP/TP—381%) and the grasses and plantain values greatly exceed those of the trees. This is presumably due to local development of agriculture, the beginnings of which were to be seen even in the earlier period, contemporary with the cairn. Cereal pollen was found on Layers E and F and in the modern turf. By the Iron Age (Layer F) this agricultural development had reached its peak. The whole landscape was open, with grasses, plantain and many other herbs as the main vegetation. It is seen that lime had disappeared from the tree pollen by this time, but otherwise the forest composition closely resembled that of the Bronze Age.

Right up to this time heather had remained at less than 10% of the tree pollen. It apparently did not spread until after the Iron Age period of cultivation. The profile from the heath clearly shows that the expansion of the heather curve was much later than that of the grasses, and this conclusion is corroborated by the curves from the upper part of the tail profile. The modern turf analyses show that the countryside is in much the same state of openness as it was in the Iron Age, but heather has now replaced grass as the dominant. Amongst the woody species alder and hazel are now reduced in relative importance and oak correspondingly increased.

There remain the two separate samples, K and Z, from the passage in the cairn. They have very similar analyses, but whereas the pollen frequency in Z is low, that in K greatly exceeds those of any other samples from this monument. The pollen in K is very well preserved and there is not the same excess of fern spores. These two samples were taken as near as possible at the level of the natural surface near the chamber, but there are serious difficulties in accepting their analyses as being contemporary with the cairn. It may be that the Layer C under the cairn is a truncated profile and that K represents the missing surface, but against this is the high percentage of heather which is not shown in either the Bronze Age or Iron Age soils. The heath profile gives no support to the suggestion of more than one wave of heather spread. Moreover, a special search was made for lime pollen in K, many thousands of grains being scanned, but none was found. Lime was present consistently even in the soil from the circle, so it should be present in any analysis contemporary with the cairn. Nowhere in these analyses is there the same combination of percentages of heather, lime and non-tree pollen, and the suggestion is put forward that this material is alien to the site and was introduced long after its construction. Sample Z is probably indigenous material strongly influenced by pollen from Sample K material.

SUMMARY

When cairn (B) was built the locality was under mixed forest, in which traces of initial forest clearance were beginning to become apparent. This was probably in the Sub-boreal (VIIb) period. The tail (E) was constructed under similar conditions, though the forest was somewhat different in composition, suggesting that the times were not identical.

By the time the circles (C & D) were built the site itself was treeless and cultivation was in progress. Cultivation reached its peak in the Iron Age, when regional deforestation had advanced considerably. Apparently it was not until after the Iron Age that heather spread, replacing farmland by moorland on these plateaux.

APPENDIX D

REPORT ON CHARCOAL

Identified by G. W. Dimbleby

Enclosure A: S.W. edge of Pit A1—bark and charcoal of Scots Pine; also one fragment of Broom.
Pit A1, sandy filling (base)—bark and charcoal of Scots Pine.
Pit A2—all Scots Pine.
Pit A2, lower, in rock-cut base—Scots Pine, Oak; some bark, possibly Pine.
Cairn A1, N.W. quadrant—all oak.

Cairn B Chamber—all Scots Pine.
N.E.-N.W. quadrants—minute flecks of charcoal of Heather (*Calluna*) and Oak.
N.W. quadrant—all Oak.
S.E.-N.E. quadrants—mostly Oak; some bark (not identifiable) and a little Hazel.
S.W. quadrant, W. of chamber—all Oak.
S.W. quadrant, S. edge of kerb—all Oak.

Circle C Pit C1—all Oak.

Circle D Pit D1 cremation—all Oak.
Filling of Pit D2—all Oak.

Tail E Trench E2, central area—Birch, Hazel and Oak

Cairn G Small fragments of Oak.

ABBREVIATIONS AND REFERENCES

Arch.	*Archaeologia.*
Arch. Cornwall	H. O'N. Hencken; 'The Archaeology of Cornwall and Scilly' (County Archaeologies, 1932).
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Y.A.J.	*Yorkshire Archaeological Journal.*